Alyeska pipeline
SERVICE COMPANY

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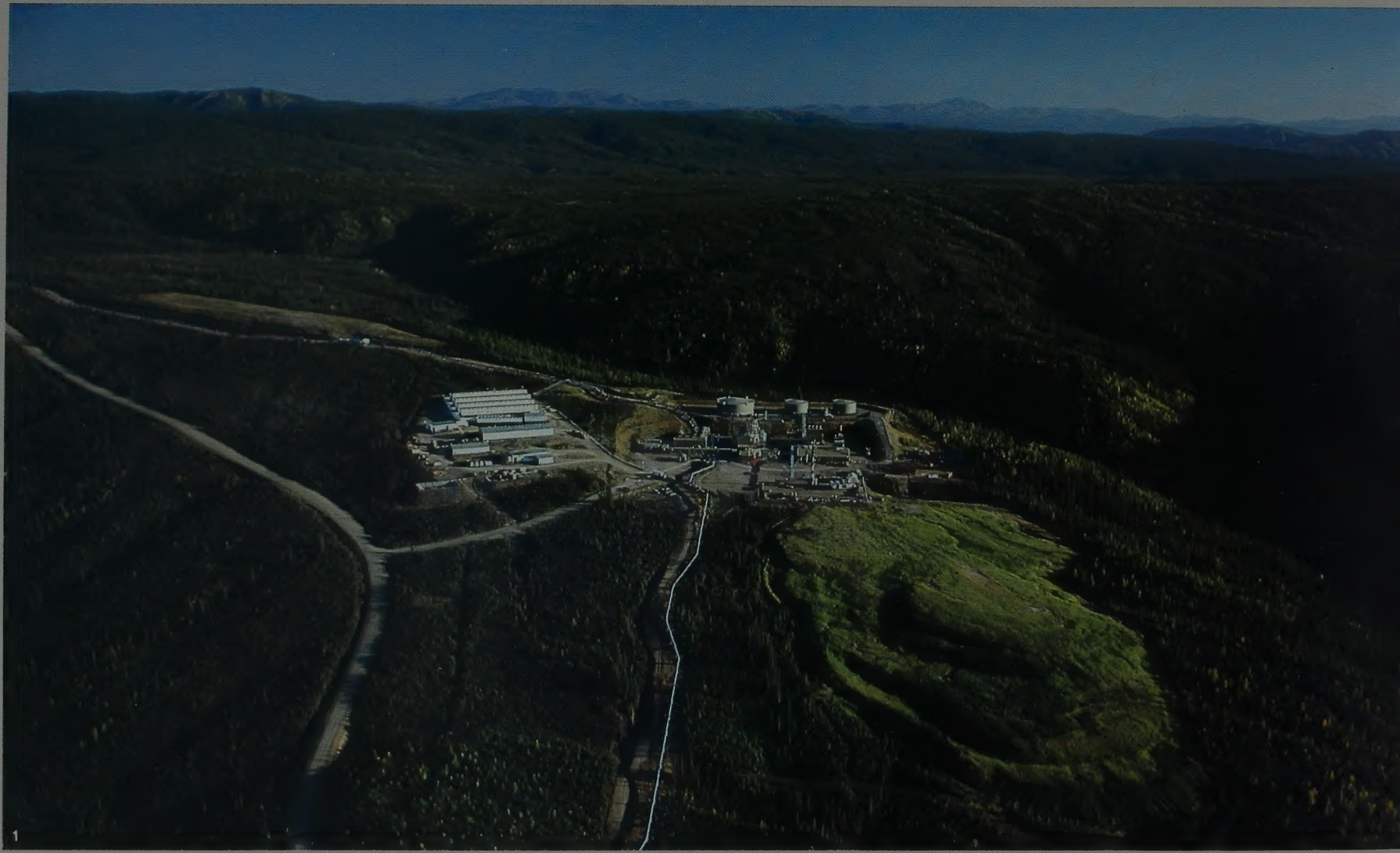
Alyeska pipeline SERVICE COMPANY

1. Pump Station 6
2. Valdez Terminal
3. Pump station interior

All about Alyeska

Alyeska Pipeline Service Company, the firm responsible for the design, construction, operation, and maintenance of the trans Alaska pipeline, takes its name from the ancient Aleut word for "Great Land," from which the name "Alaska" was derived. The company's name is more than appropriate—a project as big as our 800-mile, 8-billion-

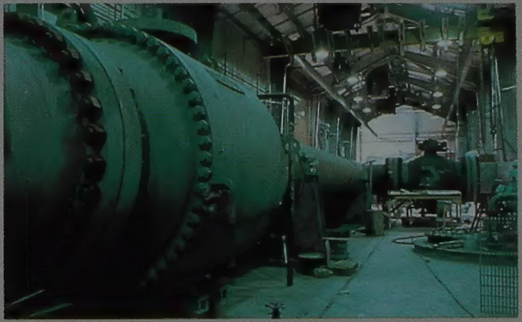


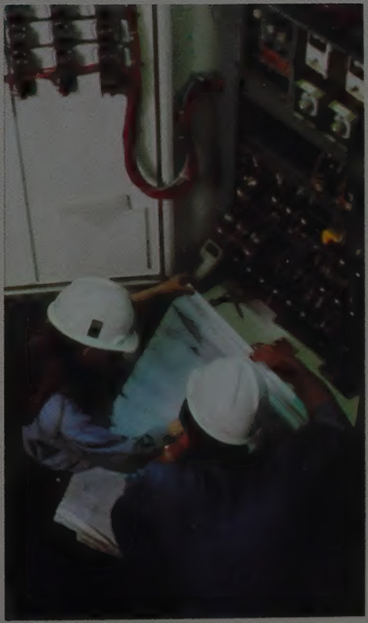
dollar pipeline could only be conceived, built, and operated in a land as big as Alaska.

Alyeska is owned by eight major companies: Amerada Hess Pipeline Corporation, ARCO Pipe Line Company, Sohio Pipe Line Company, Exxon Pipeline Company, Mobil Alaska Pipeline Company, Phillips Alaska Pipeline Corporation, Union Alaska Pipeline Company, and BP Pipelines, Inc.

This brochure is intended to explain the philosophy, organization, and operations of Alyeska Pipeline Service Company, as well as the challenges and opportunities Alaska offers to the adventurous. We've tried to combine a traditional corporate framework with the informal, friendly working relationships that are so much a part of the Alaskan lifestyle. And, of course, we're firmly committed to providing our employees with excellent working conditions, wages, and benefits.

We're proud to be part of the Great Land. We're committed to establishing programs to help our employees feel the same way as part of the Alyeska team.





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The Trans Alaska Pipeline

The trans Alaska pipeline stretches 800 miles, from the Prudhoe Bay oilfields on arctic Alaska's North Slope to the Marine Terminal at Valdez, on Southcentral Alaska's Prince William Sound. The line crosses three major mountain ranges and vast spreads of frozen tundra, passing under and over more than 800 streams and rivers.

There are 10 pump stations located along the pipeline corridor, beginning with Pump Station 1—the pipeline origin station—at Prudhoe. Alyeska is responsible for the line, the stations, and the scores of systems and subsystems that work together to bring North Slope crude to waiting tankers in Valdez.

At Pump Station 1, incoming crude oil from the field is metered and put into the line. PS 1 also meters natural gas from the Prudhoe Bay field, which is transported via small-diameter pipeline to other pump stations north of the Brooks Range, for use as turbine fuel. (Stations south of the Range refine fuel from crude oil in small refineries, or "topping plants.")

As the oil flows through the line from pump station to pump station, pushed along by pumps powered by aircraft-type turbine engines, Controllers in the Operations Control Center at the Valdez Terminal can monitor its progress. A sophisticated microwave communications network links pump stations with each other and with the Terminal; and a

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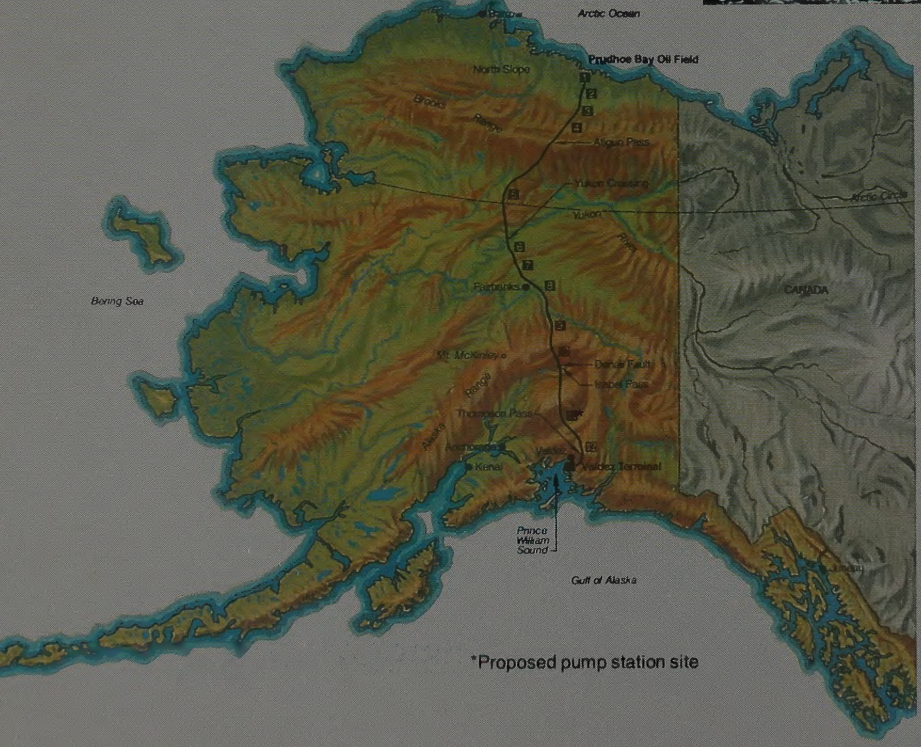
mobile radio network and a satellite back-up system are also employed. This careful, computerized monitoring allows Controllers and Pump Station Operators to keep a close watch on the line at all times. Thanks to a series of remotely-controlled valves, the flow of oil can be slowed (or stopped entirely) from Valdez, in the event of an emergency.

In accordance with stringent State and Federal regulations, every mile of the pipeline has been specially designed, fabricated, and engineered for environmental safety; and particular care was taken throughout the project to protect Alaska's wildlife, natural vegetation, and incomparable scenery.

1. Oil holding tanks at Pump Station 1
2. Tanker loading at Valdez Terminal
3. Wildlife along the pipeline route
4. Specially-designed 48" pipe was used in construction of the line



*Proposed pump station site

History of the Trans Alaska Pipeline

1. Construction of the trans Alaska pipeline took 3 years and the work of 72,000 people

Although seepages indicated the presence of oil on Alaska's North Slope at least a century ago, it was not until July of 1968 that Atlantic Richfield and Humble Oil (now Exxon) announced the discovery of oil in commercial quantities at Prudhoe Bay.

The problem of bringing this much-needed oil to market was a difficult one; but, after consideration of several alternatives, a pipeline was chosen as the safest and most efficient method of transporting North Slope crude. In August of 1970, Alyeska Pipeline Service Company was formed by eight Owner Companies to design, construct, operate, and maintain an 800-mile pipeline, stretching across some of the most inhospitable terrain on earth. Permission to launch the largest privately-financed construction project in history was granted on November 16, 1973, through Presidential approval of pipeline legislation.

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Construction began on April 29, 1974, and innovation was a necessity from the very start. The difficulties with which Alyeska was faced included permafrost (permanently-frozen soil) and rugged mountain ranges; temperatures of minus 70 degrees and colder; animal migration paths intersecting the pipeline route; salmon spawning grounds in streams and rivers the line must somehow cross; and a host of others. These factors combined to present the greatest challenge in pipeline design and engineering yet encountered in the industry.

New materials were developed, new methods were adopted, new technology was developed, and the pipeline project began to take shape. Peak employment of 21,600 was reached in mid-1975. Less than two years later, by May of 1977, all 800 miles of pipe had been installed and tested; and work on pump station, Terminal, and communications systems was almost complete. In anticipation of pipeline start-up, operations planning and training were proceeding as well.

On June 20, 1977, the official start-up of the trans Alaska pipeline was announced. And on August 1, the first 824,000 barrels of North Slope crude oil left the Port of Valdez aboard the ARCO *Juneau*.

In January of 1980, the billionth barrel of oil made the journey from Prudhoe Bay to Valdez, and was welcomed all along the way with appropriate celebrations. We're proud of this milestone in our company's history, as we are of our achievement in undertaking—and completing—this incredible project. And we're particularly proud of our people, who did the work. It's this pride that we take in our employees that helps make our employees, in turn, proud of Alyeska.

2. Valdez pipe yard

3. The historic final weld on the line, May 31, 1977

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The Company

At Alyeska, we like our employees to know just how their company's run. In order to meet the challenges of arctic engineering and pipeline operation, we've had to develop a unique corporate structure—one that's flexible and informal enough to deal successfully with the constantly-changing conditions in Alaska.

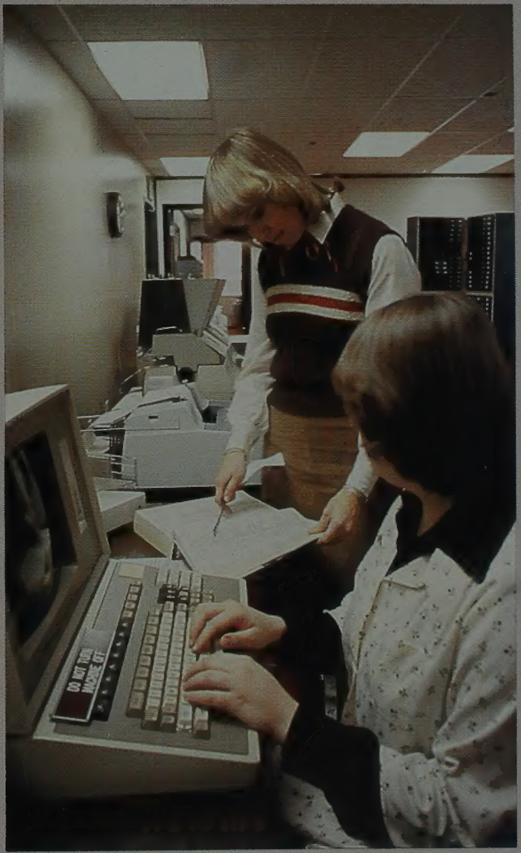
The three major divisions that make up Alyeska Pipeline Service Company—Corporate, Administration, and Operations—consist of a number of different departments. The President of the corporation is directly responsible for the Corporate Division, while Vice-Presidents oversee the other two divisions. These departments and divisions work both separately and together to see that our enormous job gets done—and done right.

Because a project of the magnitude of the trans Alaska pipeline has never before been undertaken, effective and intelligent management has always been of vital importance to Alyeska. The eight Owner Companies have been glad to loan us experienced upper-level managers, with a wide range of expertise in pipeline construction, operation, and maintenance. As a result, our employees receive first-hand knowledge of the technology and techniques necessary for Alyeska to operate the pipeline in a responsible, profitable manner.

The technical support provided by Alyeska employees demands much specialized knowledge, since arctic conditions are, to say the least, extreme. For example, Alyeska engineers must be able to handle the problems associated with low-temperature hydraulics, while still maintaining a high standard of environmental safety. Because of the remote locations of most pump stations, electrical power engineers must design self-contained, fail-safe power systems. Meeting these challenges requires skill, foresight, and experience. We do our best to see that our employees have the chance to develop all three.

Support staff positions are often as demanding—and as complicated—as technical support. Working at our multistoried Anchorage headquarters complex, staff members must provide support to engineers and technicians in pump stations, at Prudhoe Bay, and in Fairbanks and Valdez. Transportation planning, warehousing, and purchasing for a company employing more than a thousand people can be complex and difficult; but these things form the foundation on which our operations are based. So our support staff members are proud of their work. And so are we.

Ongoing plans include upgrading of pipeline design and capacity, integration of new technological advances into the system, and coordination in construction of a proposed gas line. We're looking forward to an exciting and interesting future, and we want our employees to share that anticipation.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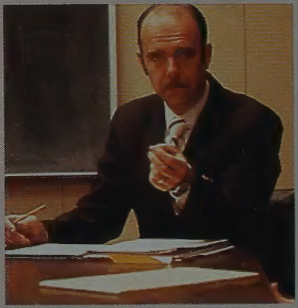

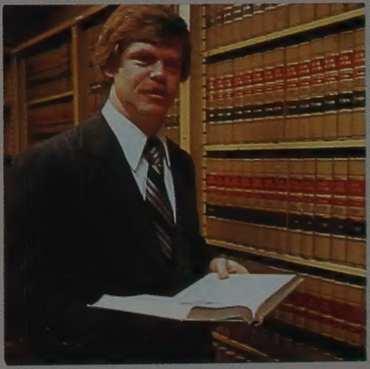

Working for Alyeska

1. Employees form teams and leagues for a variety of sports

2. Pump station employees relax in their off-duty hours

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Of course, we know that salary considerations are important to our employees. Basically, Alyeska parallels oil industry compensation rates; but, since the cost of living in Alaska is generally higher than that in the "Lower 48" states, that higher cost is taken into account, and salaries are adjusted accordingly. And, aside from monetary factors, Alyeska offers a wealth of benefits to all employees.

The Alyeska Pipeline Club, for example, is a voluntary employee association initiated by the company; its sole purpose being the sponsorship of activities and benefits for members—everything from special excursions by train to annual picnics and Christmas parties. The Club has also formed groups and

leagues for golfing, bowling, softball, volleyball, and skiing.

A summer employment program for sons and daughters of Alyeska personnel is conducted through a lottery system, with department managers giving notice of positions to be filled. And, for employees with questions, we've even got a special number to call. When you dial 8811, any questions will be recorded on tape; then reviewed by a supervisor and promptly answered.

Career development at Alyeska depends on three basic factors: qualifications, performance, and length of service. Performance, of course, is the key to advancement within the company. Internal promotion is practiced wherever possible, with supervisors reviewing performance and salary treatment periodically. We encourage employees to discuss their career goals with their supervisors, so that those goals may be taken into account when openings occur. Pump station transfers, and transfers to other departments within the company, are among the career-development options available to Alyeska employees.

In order to give our employees every opportunity for advancement, a wide variety of training and educational programs is available. Supervisors, for instance, receive Supervisory Skills Training, and other specialized education as the need, demand, or interest arises.

Technicians are offered a broad-based training program, beginning with a course conducted at Pump Station 5 during the first three weeks of employment. Specialized training outside Alaska may also be provided, at supervisors' discretion. When a new position must be created, first consideration is given to present employees, with special training arranged as the job requires. Other employees can take advantage of a continuing series of workshops covering a range of subjects.

Alyeska's Educational Assistance Program provides up to 75% tuition, and covers other reimbursable expenses, for employees enrolled in classes at the University of Alaska or a community college.

As an Equal Opportunity Employer, it is our policy to prohibit discrimination with regard to national origin, race, color, sex, age, or religious practice.

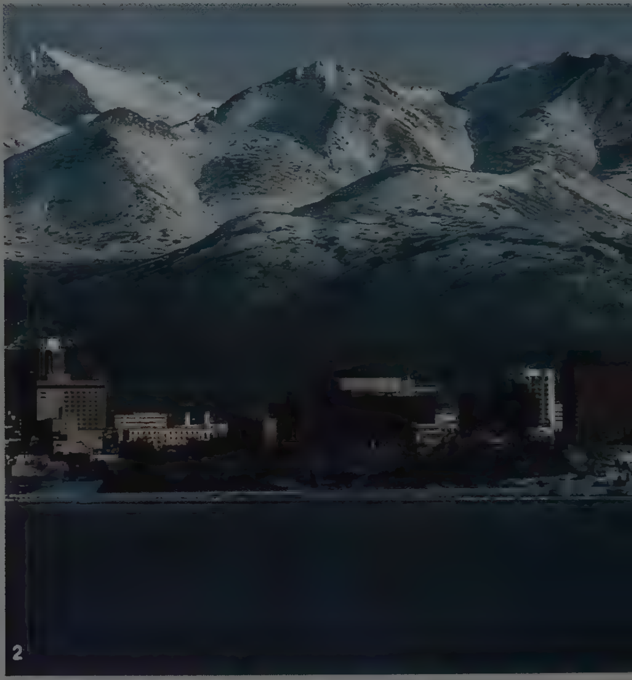
Alyeska's Alaska. You'll love it.

1. 20,320-foot Mt. McKinley, highest in North America.
2. Cosmopolitan Anchorage lies within easy driving distance of some of the world's best recreation spots

Often referred to as the "Last Frontier," Alaska is one legend that really lives up to its reputation. Covering more than half a million square miles of territory, the state encompasses several time zones and five distinct climatic areas. And the Alaskan terrain is as varied as the weather—treeless, rolling tundra and forested fiords; glaciers hundreds of feet tall, and the highest mountains in North America. It's all Alaska. And it's a great place to be.

Anchorage, where Alyeska is headquartered, is Alaska's largest city, with a population of more than 200,000. Anchorage offers refinements you'd naturally expect from a major metropolis, such as excellent hotels, restaurants, and lounges; and a wide range of cultural activities—concerts, opera, theatre, symphonies, art exhibits, and music festivals, to name a few. It's a sophisticated city; and one which is very much in touch with the rest of the world. Network, public, satellite, and cable television programming entertains residents, and a dozen different AM and FM radio stations are within listening range.

But there's another side to Anchorage. Located between Cook Inlet and the Chugach Mountains, Anchorage is surrounded by some of the most primitive wilderness in the world. The boundaries of Chugach State Park are within a few



minutes' drive of the downtown business district; and Mount McKinley National Park lies less than 200 miles to the north. The nearby Kenai Peninsula offers unparalleled recreational opportunities all year long; including fishing for the world's largest King Salmon, as well as trout, halibut, cod, bottom fish, and Silver and Red Salmon. In Alaska, you don't have to wait for summer to unpack your rod and reel—ice-fishing is a favorite sport.

Hunting, downhill and cross-country skiing, camping, backpacking, sightseeing, swimming, photography, flying, boating, scuba-diving, dogsled racing—Anchorage residents enjoy all of these activities, and many more.

The contrasting elements that come together in Anchorage—log cabins and skyscrapers, moose grazing in suburban backyards, untouched wilderness and downtown bustle—produce a frontier-style warmth and friendliness not ordinarily found in large cities. It's this combination of relaxed informality and urban sophistication that makes Anchorage a unique and delightful place to live.

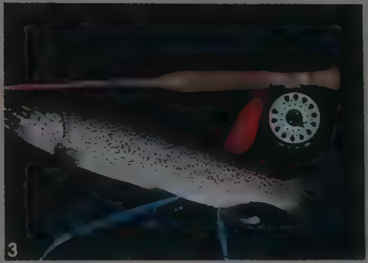
The climate of Alaska's Southcentral region, in which Anchorage is located, closely resembles that of the Pacific Northwest; with cool weather in spring and fall, warm summer days, and comparatively moderate winters. Surprisingly enough, many midwestern states experience both lower temperatures and greater snowfall than Anchorage. Fairbanks, in Interior Alaska, is colder than Anchorage in winter—but Fairbanks summer temperatures will often reach into the 90's.

Winter days in Alaska are fairly short, but generally bright and crystal-clear; and the Aurora Borealis sometimes shimmers across the sky at night. In summer, everyone's always on the go, with anywhere from 12 to 20 hours of sunlight daily from May through October. Plants grow with amazing speed during the short but intense growing season—in fact, 60-pound cabbages are not at all unusual.

Fairbanks and Valdez, where Alyeska employees also work, are fascinating cities in their own rights, each boasting a long and colorful history. But whatever the season, whatever the city, Alaska is a very special place. And it's something you really should see for yourself.

3. Sport fishermen come from all over the world to try their luck in Alaskan waters

4. Cross-country and downhill skiing are popular winter sports in Alaska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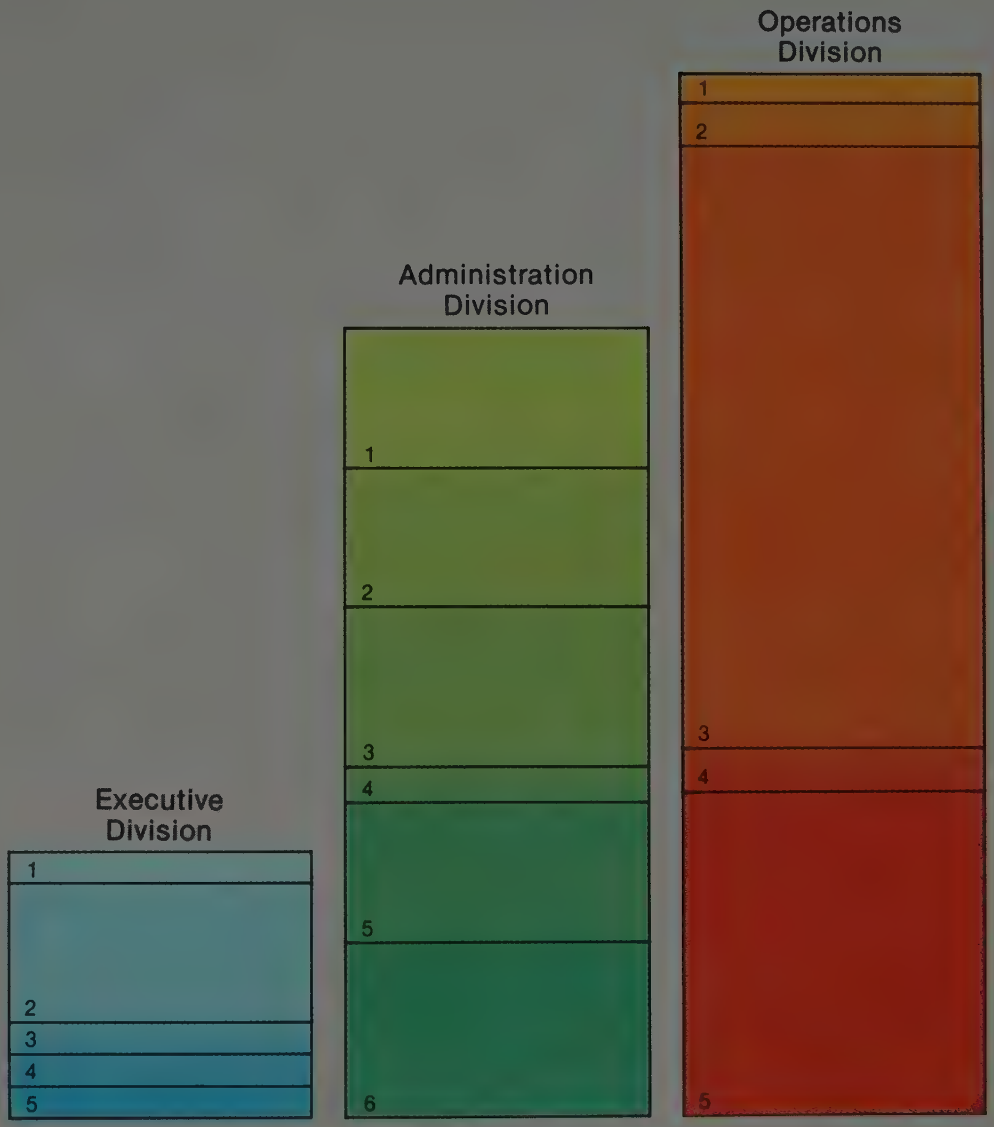
In Conclusion

At Alyeska Pipeline Service Company, we're looking forward to new growth and new challenges. We hope we've helped you to better understand our company, our philosophy, and our state. We'd like you to share our energetic future—and in one of our many departments, there may be a place for you.

Percentage of Alyeska Employees Working In Each Department



Executive Division

1. Audit	1%
2. Employee Relations	7%
3. Legal	1%
4. President	1%
5. Public Affairs	1%

Administration Division

1. Administrative Services	7%
2. Contracts and Materials	7%
3. Controller/ Treasurer	8%
4. Security	1%
5. Systems and Computing	5%
6. Technical Services	9%

Operations Division

1. Environmental Protection and Government Reports	1%
2. Oil Movements	2%
3. Pipeline	31%
4. Project Management	2%
5. Valdez Terminal	16%

Headquarters: 1835 South Bragaw Anchorage, Alaska 99512

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Pump Stations

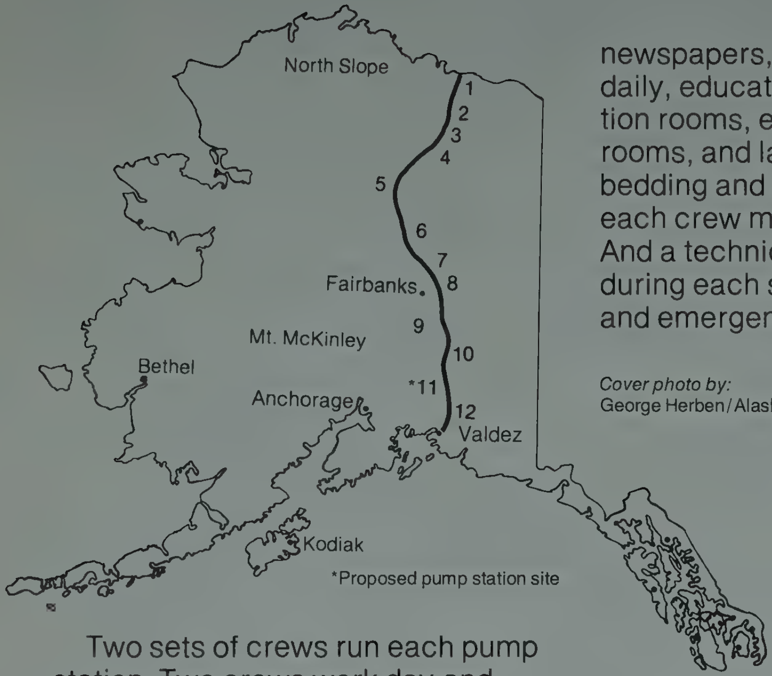
The pump stations of the trans Alaska pipeline are located at intervals along the 800-mile pipeline corridor, from Prudhoe Bay to the Little Tonsina River (70 miles north of Valdez.) The 10 pump stations in operation on the line are the main facilities of the pipeline's hydraulic system. The pump stations—and the technicians working at them—keep the oil flowing through the line to the waiting tankers in Valdez harbor. Although the line has many automatic features, and can be controlled from the Pipeline Control Center at the Valdez Terminal if necessary, Pump Station Operators exercise a good deal of local control as well. Being on the spot means being able to handle problems as they arise, quickly and competently.

Being on the spot also means working in remote locations—often isolated by rough terrain and extreme weather conditions—surrounded by vast stretches of breathtaking Alaskan wilderness. It's a job that calls for highly-skilled, well-trained people.

The nearly 200 technicians who operate and maintain the complex of systems and support facilities at the pump stations are chosen for their strong backgrounds in several areas—jet engine repair and maintenance, for instance; or electronics and instrumentation. New pump station personnel receive additional training in an intensive 3-week basic program dealing with various aspects of pump station facilities, operation, and maintenance.

In addition to the mainline pumps, and the turbines which drive them, pump stations incorporate a number of different systems and subsystems. The four northernmost pump stations, for example, have natural gas fueling systems. Pump Station 1—the pipeline origin station on the North Slope—employs systems for metering oil and gas from the Prudhoe Bay fields; as well as a vapor recovery system.

Absorbing—and using—the huge amount of technical information required for efficient pump station operation takes hard work and dedication. But those who work at the pump stations know they're performing a vital role in the pipeline's operation. And they're well-paid for their work, too.



Two sets of crews run each pump station. Two crews work day-and-night shifts, 12 hours per day, for seven days, when ''change out'' takes place. Two more crews arrive to work the next seven days, while the first group takes a week off. For these 84-hour workweeks, technicians receive pay equivalent to 106 straight hours.

People who may have to cope with below-zero temperatures in the winter—and remote work locations even under the best conditions—deserve the best. So living quarters are comfortable, the food is excellent—and there's plenty to do. Pump Stations provide lending libraries, closed-circuit television, newspapers, first-run movies twice daily, educational programs, recreation rooms, exercise and weight rooms, and laundry facilities. Even bedding and linens are furnished in each crew member's private room. And a technician/medic is on duty during each shift, to provide medical and emergency care if needed.

Cover photo by:
George Herben/Alaska Photo

Alyeska also provides cold-weather gear; and covers the cost of two 5-minute phone calls within Alaska during each technician's 7-day shift. And the company contributes to a recreation fund, which may be applied as individual pump station crews choose. One crew has invested their recreation funds in a rock-polisher; and summertime softball teams have equipped themselves with custom-made shirts and new gear.

There's a spirit of friendliness and fellowship among the close-knit crews that man the pump stations. And it's that spirit that makes the job a rewarding experience as well as a challenging one.

Valdez

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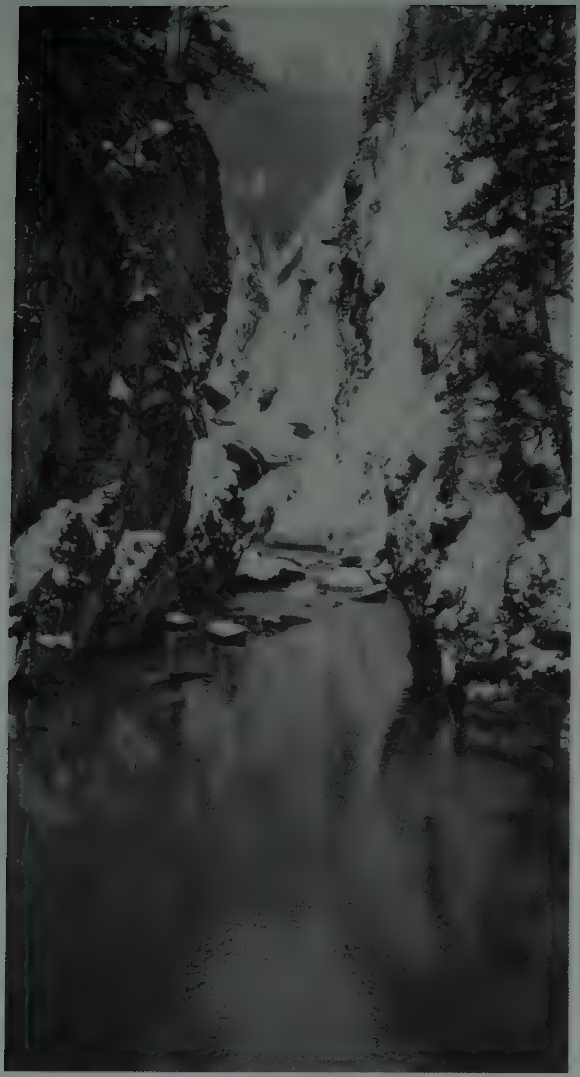
Valdez, on Southcentral Alaska's Prince William Sound, is often called the "Switzerland of Alaska"—with good reason. Snow-capped mountains laced with waterfalls form a dramatic contrast to the beautiful waters of the Sound, where porpoises, sea otters, and even whales can often be seen. And the city itself—fresh, vital, and enthusiastic—matches its spectacular setting.

Since Valdez is the northernmost ice-free port in Alaska, it was the logical site for the trans Alaska pipeline's Marine Terminal. Following the 1964 earthquake, the city of Valdez was relocated and rebuilt.

With a population of almost 5,000, Valdez is a fast-growing city—and a prosperous one, with the highest per-capita tax base in the United States. In order to expand and diversify the city's economic base, several programs are being initiated, including a Fisheries Development Project. Construction of a large container port is planned, to re-establish Valdez as a major transportation center.

Quality of life is extremely important to Valdez residents, and the city is putting millions of dollars into public works projects, including a new Civic Center and a Community School facility.



Climate

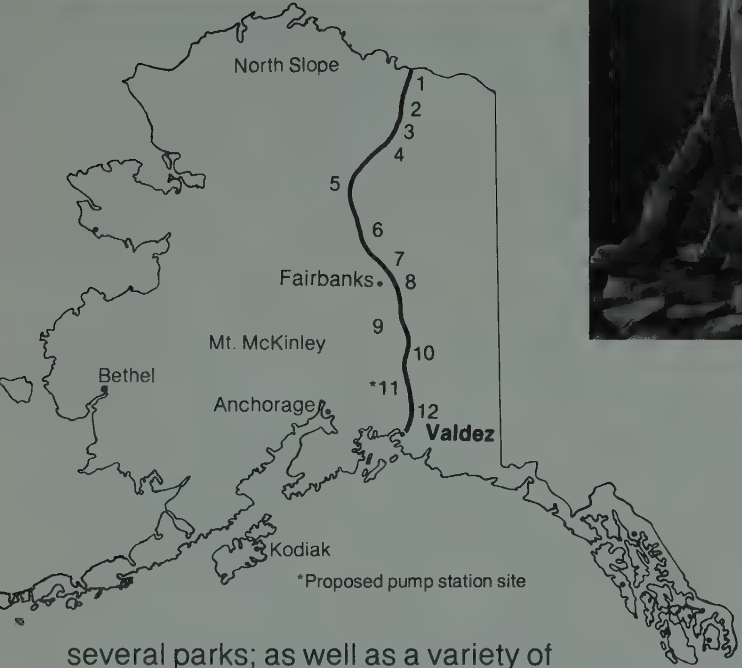
Rather unexpectedly, perhaps, Valdez enjoys a relatively temperate climate. Temperatures range from an average minimum of 11 degrees Fahrenheit in January to an average maximum of 61 degrees in July. Winter days tend to be crisp and clear, with an annual average snowfall of 250 inches; while summer days can last up to 20 hours. All year round, Valdez residents dress much as they would in the northern Rockies.

Recreation

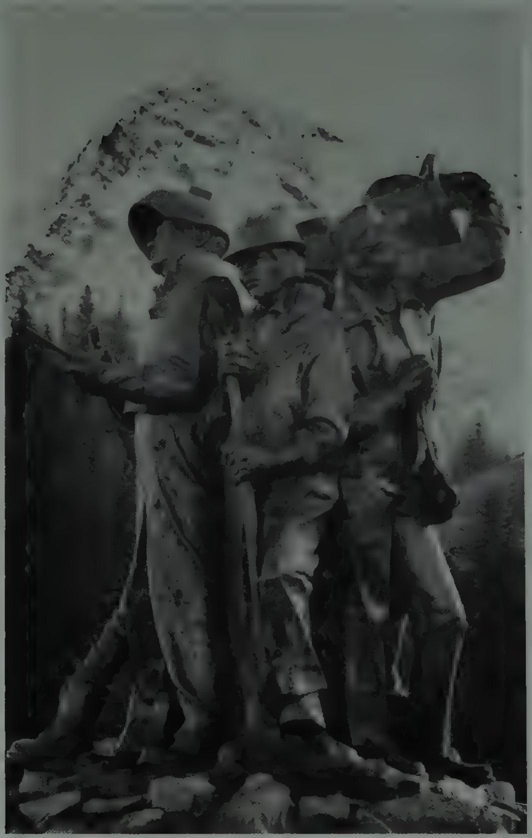
Some of the finest recreational opportunities in the world can be discovered in and around Valdez. Winter sports include skiing at Thompson Pass, snowshoeing, cross-country skiing, snowmobiling, and a perennial Alaskan favorite—dog mushing.

During the season, aspiring hunters can stalk moose, bear, Dall sheep, mountain goats, and waterfowl in the area. And Valdez is, quite simply, a fisherman's paradise. Halibut, red snapper, rock bass, ling cod, grey cod, and four different species of salmon are found in Prince William Sound. Dolly Varden and rainbow trout abound in the rivers, lakes, and streams nearby; and clams, shrimp, and crab are readily available. Charter boats can be hired at the Valdez small boat harbor, which also provides docking facilities for small-boat owners.

In the city itself, you'll find movie theatres, tennis courts, an Olympic-sized pool, a recreation center, an indoor rifle range, a teen center, and



several parks; as well as a variety of cultural organizations. Community activities are enthusiastically supported by the business community—for example, the Valdez Chamber of Commerce sponsors the annual Valdez Winter Carnival and the city's Silver Salmon Derby. Another annual event is the "Gold Rush Days" celebration, held each August to commemorate the early history of Valdez, which served as gateway to Alaska's interior for thousands of Klondike stampeders.



Photographs courtesy of:
Clark Mishler
Jim Coccia
Valdez Vanguard
Frank Flavin

Transportation

By land, Valdez can be reached from Anchorage and Fairbanks via the Glenn and Richardson Highways. Regular ferry service during the summer connects Valdez with Seward, Whittier, and Cordova. There are scheduled flights from Anchorage, Fairbanks, and Cordova to Valdez; and charter planes are available for "flightseeing" trips.

Education

There are approximately 700 students, Kindergarten through twelfth grade, enrolled in Valdez public schools. Prince William Sound Community College—part of the University of Alaska's community college system—has an average annual student enrollment of 600. A special-care facility, Harborview Development Center, is also located in Valdez.

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Fairbanks

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Fairbanks—Alaska's second-largest city—is located in the heart of the state's vast interior region. Situated on the banks of the Chena River, Fairbanks enjoys a view of the distant Alaska Range in the south, and the Brooks Range far to the north. And this modern city of 64,000 is as unique and interesting as the people who live there.

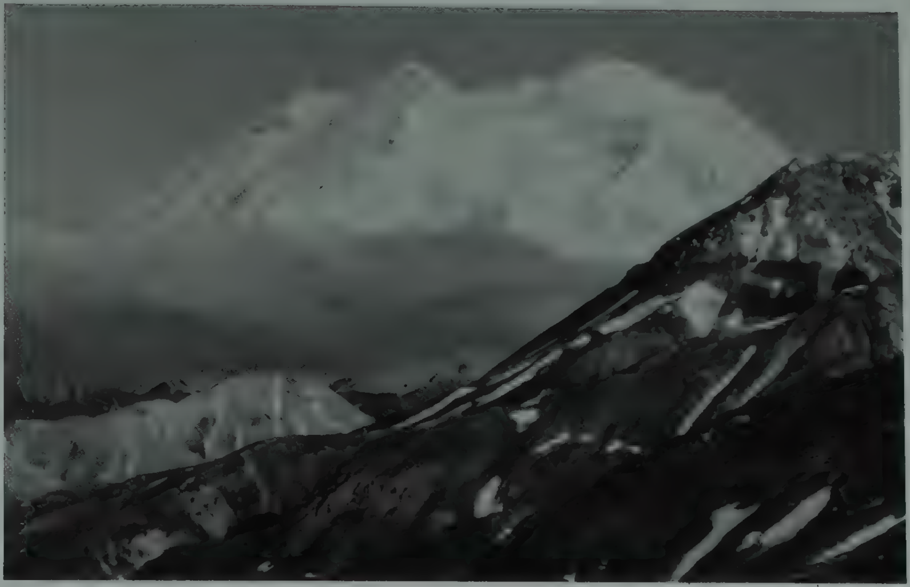
As commercial hub of the interior, Fairbanks provides goods and services to Alaska's far-flung Bush communities. Several arctic and sub-arctic research facilities are located in the vicinity of Fairbanks; and the city is regarded as a key staging area for petrochemical development.

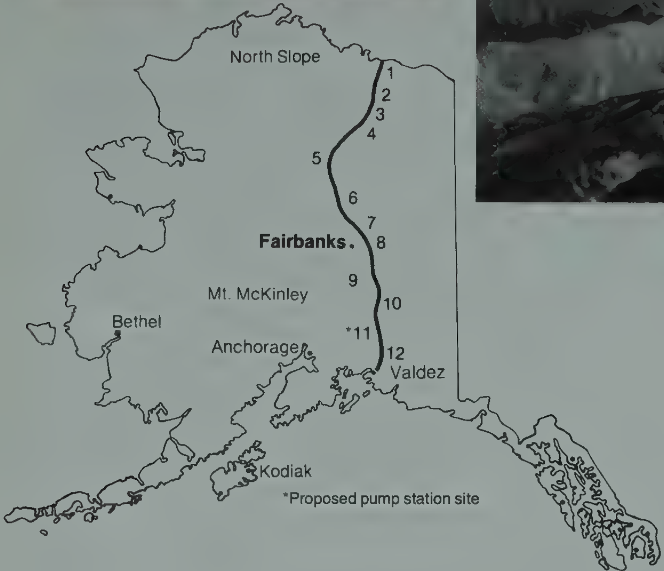
But in spite of these big-city attributes, Fairbanks has managed to retain a gold-rush flavor all its own. Log cabins harmonize comfortably with ultra-modern shopping malls and apartment complexes; rough-and-ready trappers and miners mingle freely with businessmen, students, Alaska Natives, tourists, and construction workers on the busy streets of the city. Fairbanks is a friendly town, and a hospitable one—as new residents are quick to discover.

Climate

Fairbanks is a city of dramatic contrasts—with a climate to match. Winter temperatures can drop to minus 50 degrees Fahrenheit and lower, with an average temperature of minus 23 degrees in January. Summer temperatures, on the other hand, often soar into the 90's, although the average is 74 degrees in July.

Fairbanks residents adjust easily to these climatic extremes. At summer's height, daylight can last 20 hours or more. Long, dark winter nights are often lit by the glow of the Aurora Borealis—the famous Northern Lights. And, whatever the weather or time of year, there's always something exciting to do or see in Fairbanks.





Photographs courtesy of:
Ron Havenstein
Karla Zervos
Grace J. Moore

Recreation

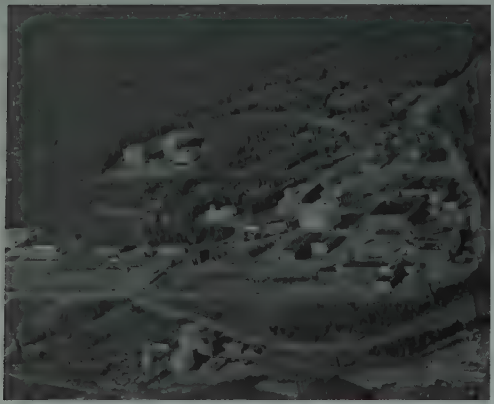
Recreational opportunities in Fairbanks cover a broad spectrum—outdoor and indoor; winter and summer; sporting and cultural.

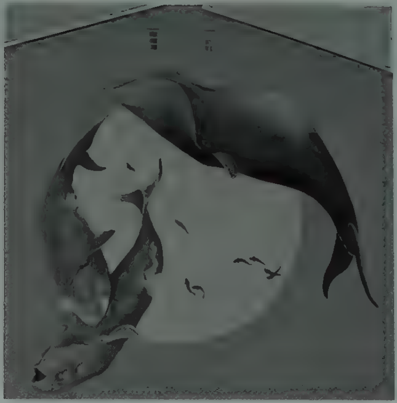
Hockey, curling, cross-country and downhill skiing, ice-fishing, snowshoeing, ice-skating, snowmobiling, and dog-mushing are favorite winter activities. Summer days are enlivened by biking, golfing, hiking, gold-panning, camping, boating—and, of course, fishing. Anglers can try for rainbow trout, northern pike, and grayling in the many streams and lakes near Fairbanks. Trapping and big-game hunting are also popular pursuits with area residents.

Favorite annual events include the Yukon 800 Riverboat Race, and a special exhibition baseball game played at midnight on June 21, longest day of the year, by Fairbanks' semi-pro team (the Fairbanks Gold Panners.)

The cultural scene in Fairbanks is rich and varied. Entertainment is provided by such groups as the Fairbanks Drama Association, the Light Opera Company, and the Fairbanks University Symphony Orchestra. The Alaskaland Civic Center is home to the Alaska Association of the Arts. The recently-constructed University of Alaska Museum houses a wide variety of cultural and historical artifacts, as well as examples of the area's flora and fauna.

There are at least a thousand clubs, societies, and other organizations in Fairbanks, catering to the diverse needs and interests of every segment of the population.





Transportation

Reaching Fairbanks by road is a simple matter, since all highways in Alaska connect with the city—including the 1,520-mile Alaska Highway from Dawson Creek, B.C., to Fairbanks. Two highways link Fairbanks with Anchorage, 358 miles to the southwest; and Valdez is reached via the Richardson Highway. Fairbanks is connected with the Prudhoe Bay oilfields on Alaska's North Slope by a special haul road which, however, is closed to the general public beyond the Yukon River. An excellent view of the trans Alaska pipeline can be obtained along the public portions of this road.

Fairbanks is the northern terminus of The Alaska Railroad, which links the city with McKinley Park, Anchorage, and the Kenai Peninsula port cities of Whittier and Seward; as well as several small communities along the way. Connections with the Alaska Marine Highway ferry system can be made at Whittier.

Fairbanks International Airport is a refueling and transfer point for passenger jets and air cargo planes, with daily scheduled jet service to and from Anchorage and the Lower 48 states. Flights are also available to a number of remote Alaskan communities; and year-round aircraft charters provide service to even the most isolated villages. Smaller airports and float-plane facilities handle light aircraft.

Education

There are 19 public and 4 private schools in Fairbanks, as well as an Adult Career Development Center. College-level education is provided by Tanana Valley Community College and the University of Alaska's main campus—the northernmost institution of higher education in the Western Hemisphere, and the only campus in the statewide university system that offers residential facilities to students.

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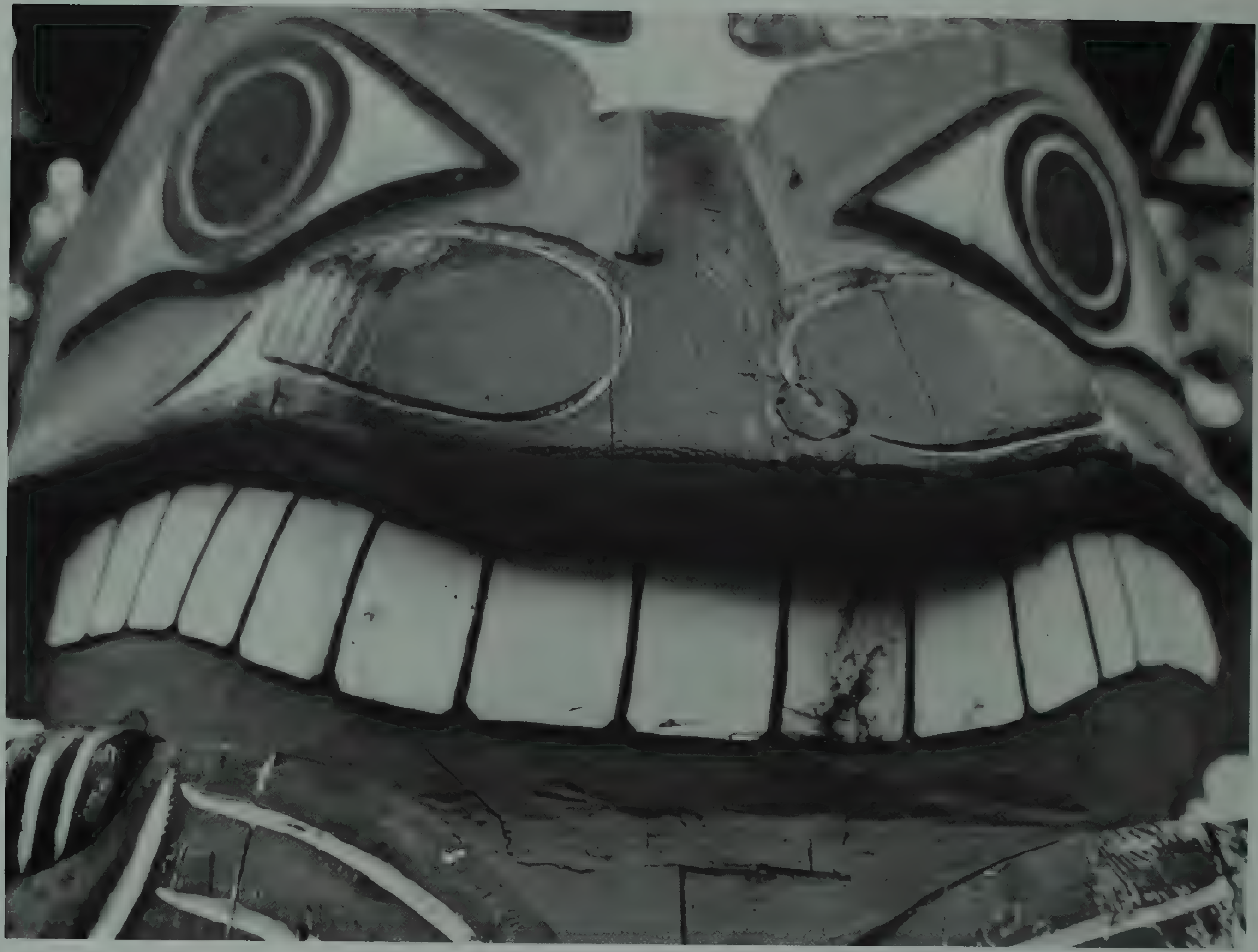
Anchorage

Located at the head of Cook Inlet in Southcentral Alaska, Anchorage is the state's business and industrial center as well as its largest city. With a population of more than 200,000, Anchorage is a city of cosmopolitan sophistication—surrounded by thousands of square miles of almost undisturbed wilderness.

This dramatic contrast touches almost every facet of life in Anchorage. Concerts, theatre productions, and formal events are as much a part of Anchorage as the free-and-easy atmosphere of the annual Fur Rendezvous celebration, and blue jeans are as acceptable as three-piece suits. The city is a curious blend of past and present; where skyscrapers tower above log cabins, and moose often wander through suburban neighborhoods.

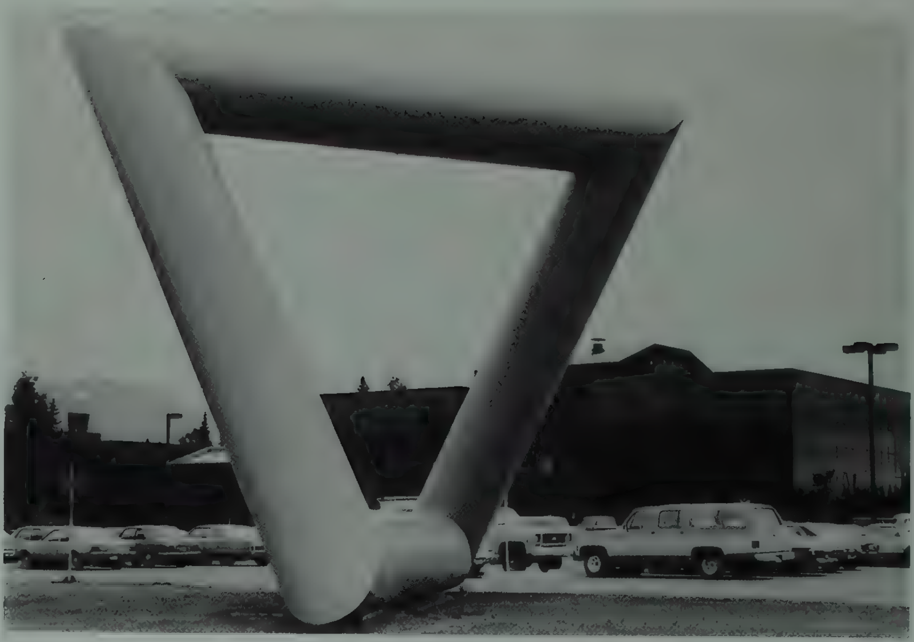
Anchorage is known as "Air Crossroads of the World," due to its strategic location between the U.S., Europe, and the Far East. Every day, planes and passengers from all over the world stop over at Anchorage International Airport.

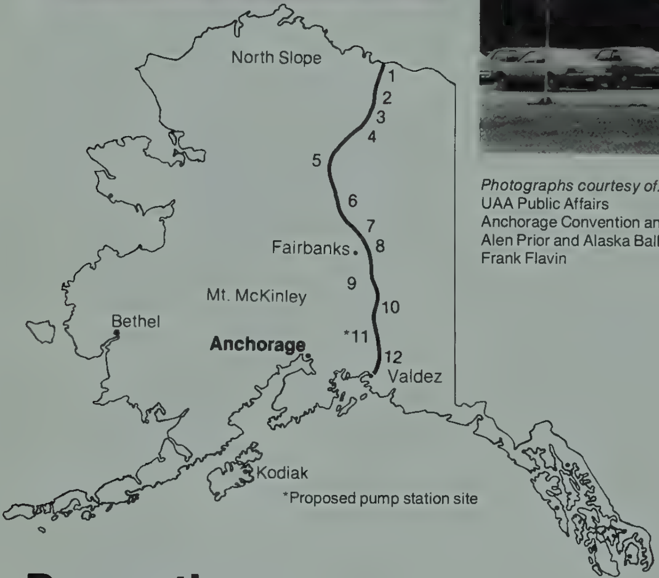
Most of Alaska's major business institutions—including Alyeska Pipeline Service Company—have their headquarters in Anchorage; particularly national and international petroleum and energy development firms. As a result, the city's population includes representatives of many different states, countries, and cultures. It's this social and cultural diversity that makes Anchorage such a special place to live.



Climate

Anchorage is situated in what's called the "banana belt" of Alaska. The mountains that shelter the city from north winds work with the warm Japanese current to produce a fairly moderate climate. Winter temperatures average 13 degrees above zero, Fahrenheit, in January and only occasionally drop to minus 20 degrees or lower; the average annual snowfall is only 60 inches. Summer temperatures sometimes reach into the seventies, and the average July temperature is 51 degrees. On June 21, longest day of the year, daylight can last up to 19 hours or more; while the shortest day—December 21—has only about 5 hours of daylight. Winter weather is generally crisp and clear, with the Northern Lights sometimes painting the sky through the long nights.





Photographs courtesy of:
UAA Public Affairs
Anchorage Convention and Visitors Bureau
Alen Prior and Alaska Balloon Adventures
Frank Flavin

Recreation

Year-round recreational opportunities in and around Anchorage are almost unlimited. In the summertime, there's camping, fishing, hunting, climbing, hiking, boating, flying, berry-picking, sightseeing—even hang-gliding and hot-air ballooning. And it all happens conveniently close to home.

Mount McKinley National Park is just a few hours away by car, bus, or The Alaska Railroad. North America's tallest peak forms an impressive 20,320-foot backdrop for fields of wildflowers, blazing with color; and wildlife is everywhere. The Kenai Peninsula boasts some absolutely unparaleled fishing spots—in fact, the world's largest King Salmon are caught in the Kenai River. Fishermen can try for red, pink, chum, and silver salmon; grayling and Arctic char; rainbow and Dolly Varden trout, and halibut—not to mention Alaskan shrimp and King Crab. Fly-in fishing trips to remote camps, cabins, and lodges are easily arranged, but many of the best fishing holes are accessible by road.

For winter sports enthusiasts, there are two ski resorts located within driving distance of Anchorage; and miles of cross-country ski trails criss-cross the surrounding area. Snowmobiling and dog-mushing are popular winter activities, along with ice-fishing, snowshoeing, hockey, figure-skating, and curling. Instruction in winter survival, ice-climbing, mountaineering, and similar subjects is offered by Anchorage's two Universities, and sometimes by State Park Rangers.

Within the Municipality of Anchorage proper, there are golf courses, archery and rifle ranges, community and teen centers, baseball fields, extensive bike trails, and a multitude of parks. And, winter or summer, never a week goes by that something exciting isn't happening in Anchorage.

Performances by the Alaska Repertory Theatre, the Civic Opera, the Anchorage Symphony, and other groups are frequent. Anchorage residents appreciate the arts—and it shows. Outstanding sculptures, carvings, tapestries, paintings, and murals are casually displayed throughout the city. The Anchorage Historical and Fine Arts Museum houses a permanent exhibit on the Native cultures and arts of Alaska; and hosts special exhibitions featuring the work of artists both Alaskan and international. The Visual Arts Center and more than 30 art galleries provide showcases for artistry in every medium.

Transportation

Anchorage can be reached by automobile via the Alaska Highway, which begins at Dawson Creek, B.C., and ends at Fairbanks, 358 miles north of Anchorage. Two highways connect Fairbanks with Anchorage. Motorists may also board an Alaska Marine Highway ferry at Seattle or Prince Rupert, B.C., for a cruise up Southeast Alaska's fabled "Inside Passage." From Haines or Skagway, car travel resumes over the Alaska Highway.

Passengers may also travel up the Inside Passage by cruise ship, continuing to Anchorage by bus or car; or they can take the spectacular narrow-gauge railway trip from Skagway to Whitehorse, and continue from there.

A number of major airlines offer daily scheduled flights from Anchorage to points in the Lower 48 states and Hawaii, as well as international destinations. Domestic airlines serve Fairbanks, Nome, Kotzebue, and more remote Alaskan communities. And the world's largest sea-plane base—Lakes Hood and Spenard—is also located in Anchorage.

The city is headquarters for The Alaska Railroad, which carries passengers to McKinley Park and Fairbanks to the north. Scheduled service is also available to Whittier, on Prince William Sound, where connections may be made for a ferry cruise to the trans Alaska pipeline Terminal city of Valdez.

Education

Anchorage has 64 public schools—53 elementary, 6 junior high, and 6 senior high schools; and a number of religious, business, and trade schools.

A branch campus of the University of Alaska offers both graduate and undergraduate degrees. Anchorage is also home to a community college, and Alaska Pacific University.

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ALYESKA PIPELINE

Operations Summary

BOREAL INSTITUTE
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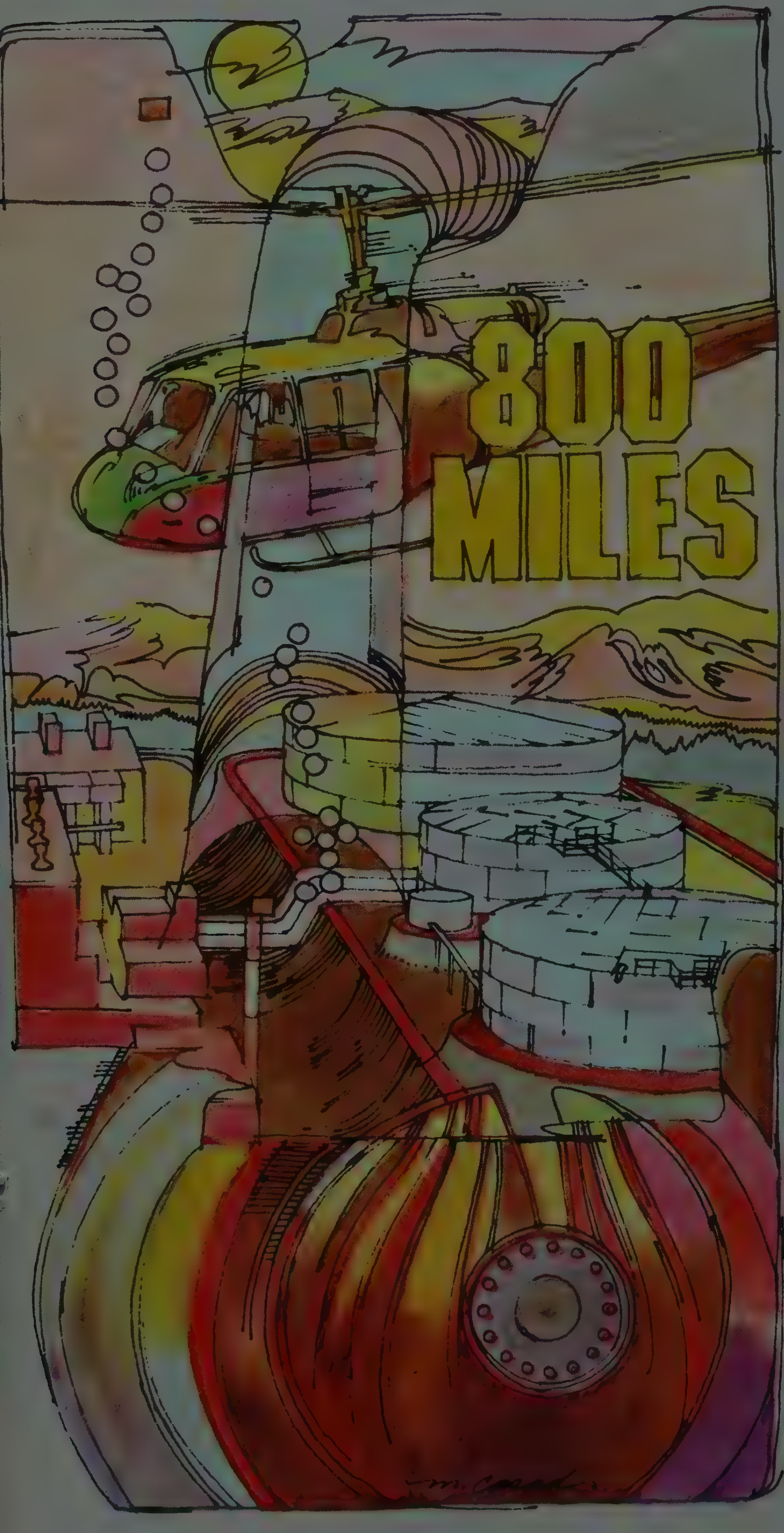


Alyeska and the Pipeline

More than half of the trans Alaska pipeline is above ground.

Most of the world's hundreds of energy pipelines receive little or no public notice. But because of the age in which it was built and the land through which it passes, the trans Alaska oil pipeline is unique. Its name was well-known even before it was constructed. And now, long after the intense building period, it still commands considerable public interest.

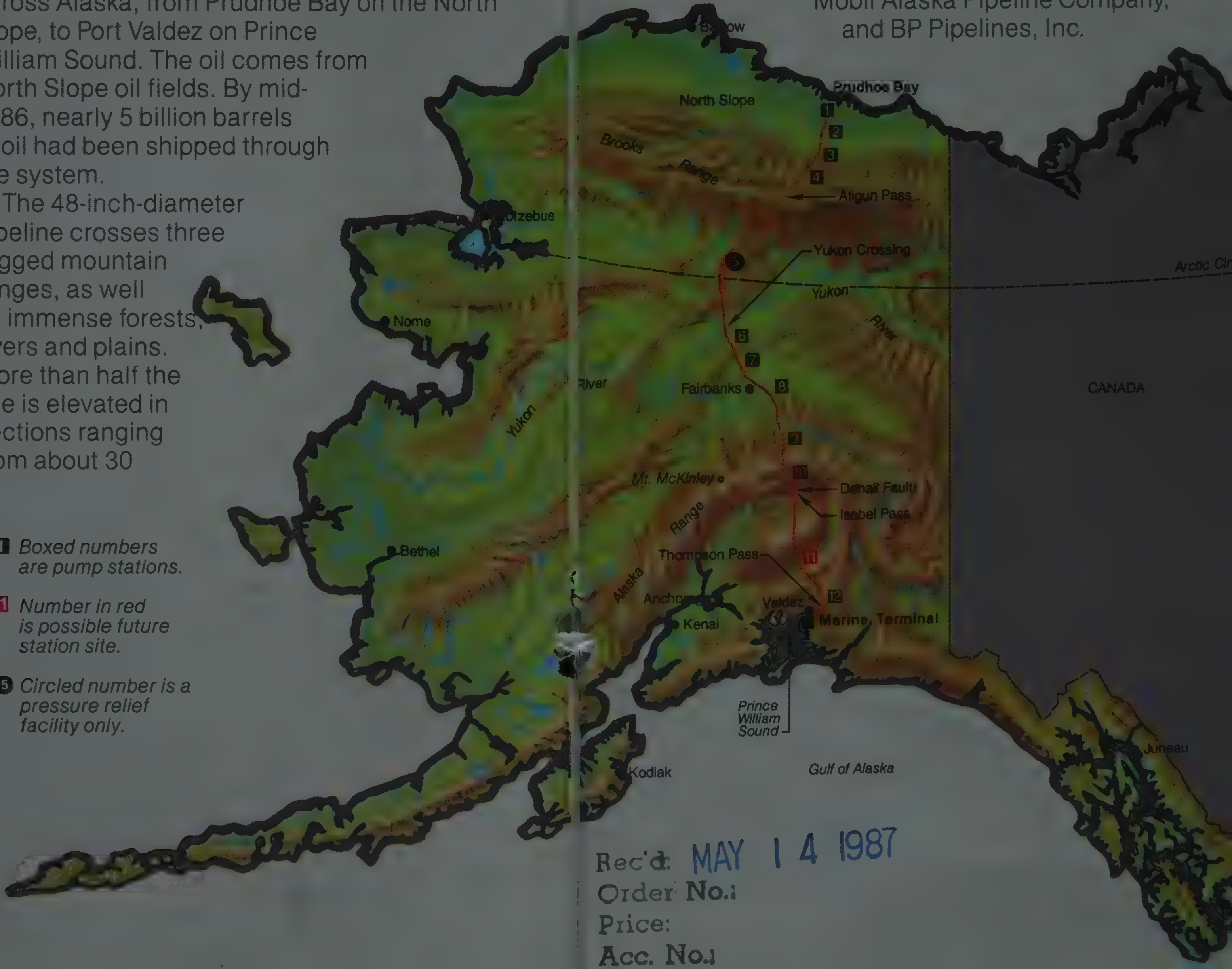
The 800-mile-long pipeline carries crude oil across Alaska, from Prudhoe Bay on the North Slope, to Port Valdez on Prince William Sound. The oil comes from North Slope oil fields. By mid-1986, nearly 5 billion barrels of oil had been shipped through the system.

The 48-inch-diameter pipeline crosses three rugged mountain ranges, as well as immense forests, rivers and plains. More than half the line is elevated in sections ranging from about 30 miles in length, to a few hundred feet. The remainder is buried.

Principal system components, besides the pipeline itself, are pump stations and the Marine Terminal.

The system began operating August 1, 1977. Its throughput is about 1.8 million barrels per day.

Alyeska Pipeline Service Company operates the system and was responsible for its design and construction. Alyeska is owned by Amerada Hess Pipeline Corporation, ARCO Pipe Line Company, Sohio Pipe Line Company, Exxon Pipeline Company, Phillips Alaska Pipeline Corporation, Union Alaska Pipeline Company, Mobil Alaska Pipeline Company, and BP Pipelines, Inc.



1 *Boxed numbers are pump stations.*

11 *Number in red is possible future station site.*

5 *Circled number is a pressure relief facility only.*

Rec'd: MAY 14 1987
Order No.:
Price:
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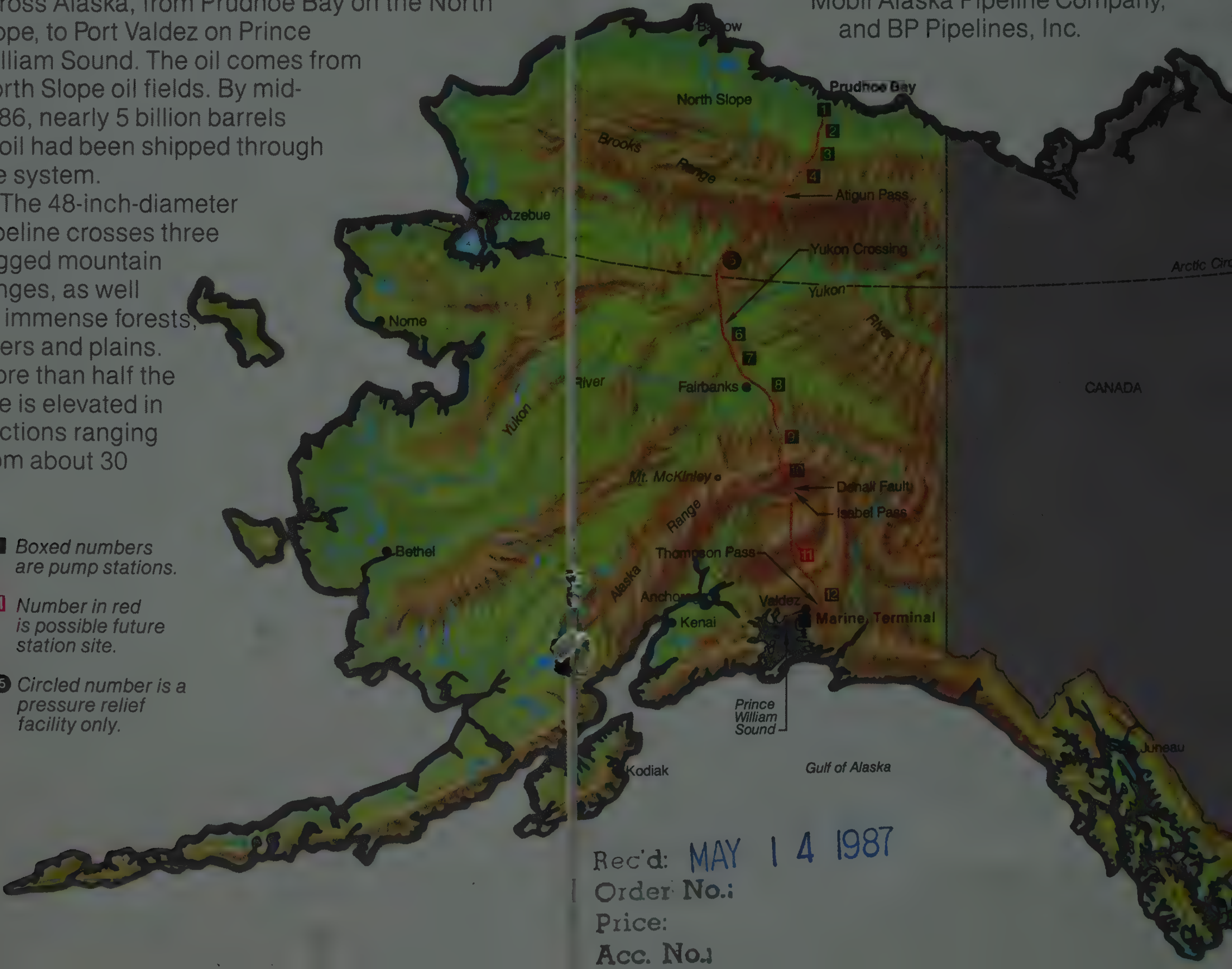

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Pump Stations

Crude oil is moved down the pipeline by a series of ten operating pump stations. An additional facility provides oil control capability, and could become a pump station if expansion of the system were required. A twelfth station site also is available. The facilities were built specifically for Arctic conditions; all equipment and virtually all station piping are in insulated, windowless buildings connected by enclosed hallways. Living accommodations are provided for crews at remote station locations.

Pump station facilities are shown below. The heart of each station is the main pump building, which houses gas turbine-driven mainline pumps. Most stations have three pumps (including a standby), each of which can move 25,000 gallons of oil a minute, or up to 850,000 barrels a day. (One barrel equals 42 gallons.)

Fire and vapor detection systems are installed in all pump station buildings, and all buildings are protected by fire suppression systems.

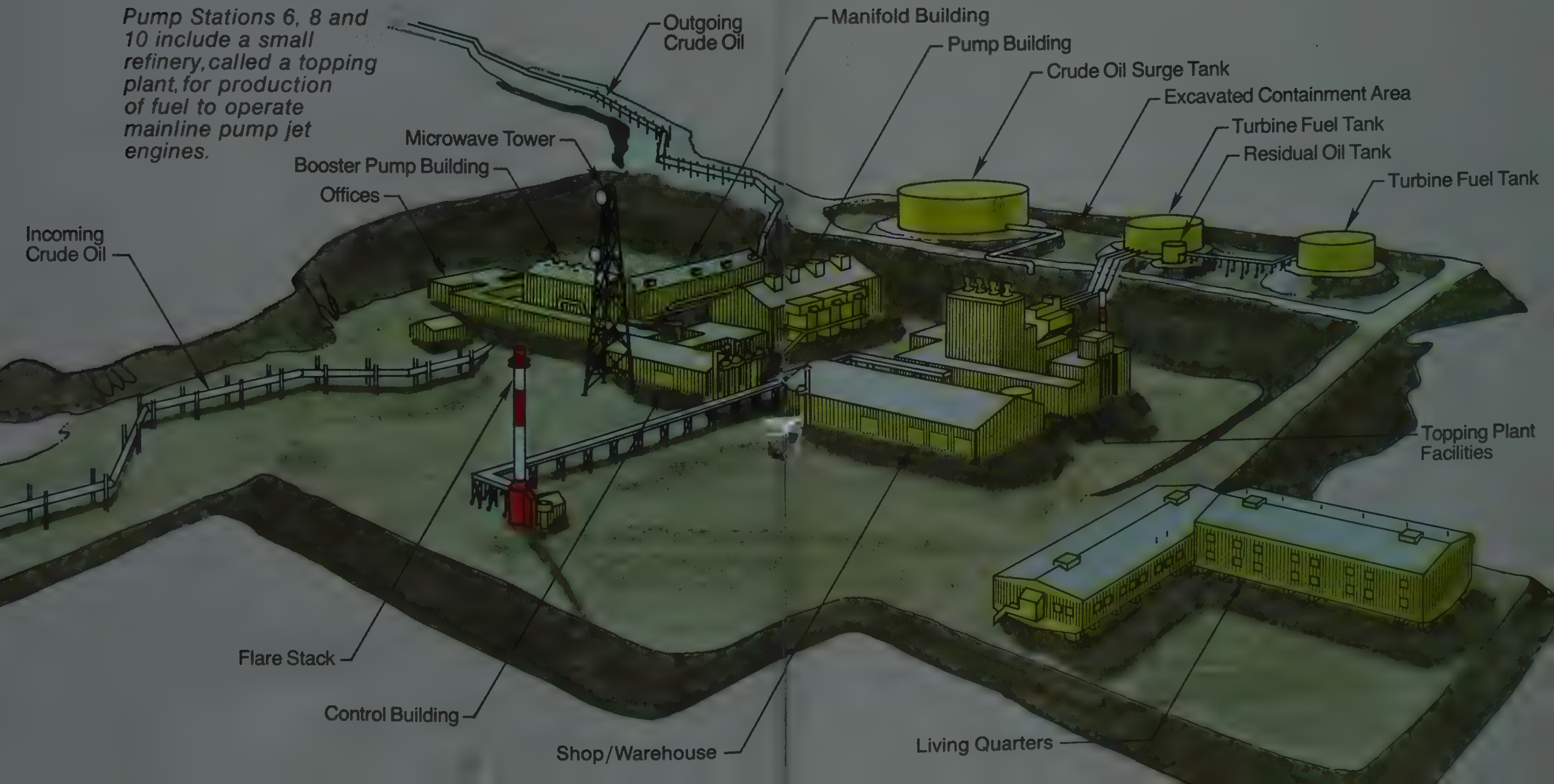
Natural gas, turbine fuel, and electricity provide energy for some or all of the pump stations, and, for the most part, are produced within Alyeska's own system.

Chief pump station supervisor discusses operation of a pump with a technician.

Pump Station 1, the receiving station for crude oil, has several facilities not necessary at other stations. These facilities measure incoming oil, control hydrocarbon emissions, and accommodate any differences in the pumping rate of the incoming oil and the rate of the pipeline itself.

Oil comes from the ground at temperatures as high as 180 degrees Fahrenheit, and it cools to about 140 degrees before entering mainline pumps.

The initial pump station also has a launching facility for special devices called "pigs" which are used to clean accumulated wax from interior pipe walls and to check interior pipe-wall condition. Pigs, which travel in the oil stream, also can be launched at two other stations and received at three points along the line.



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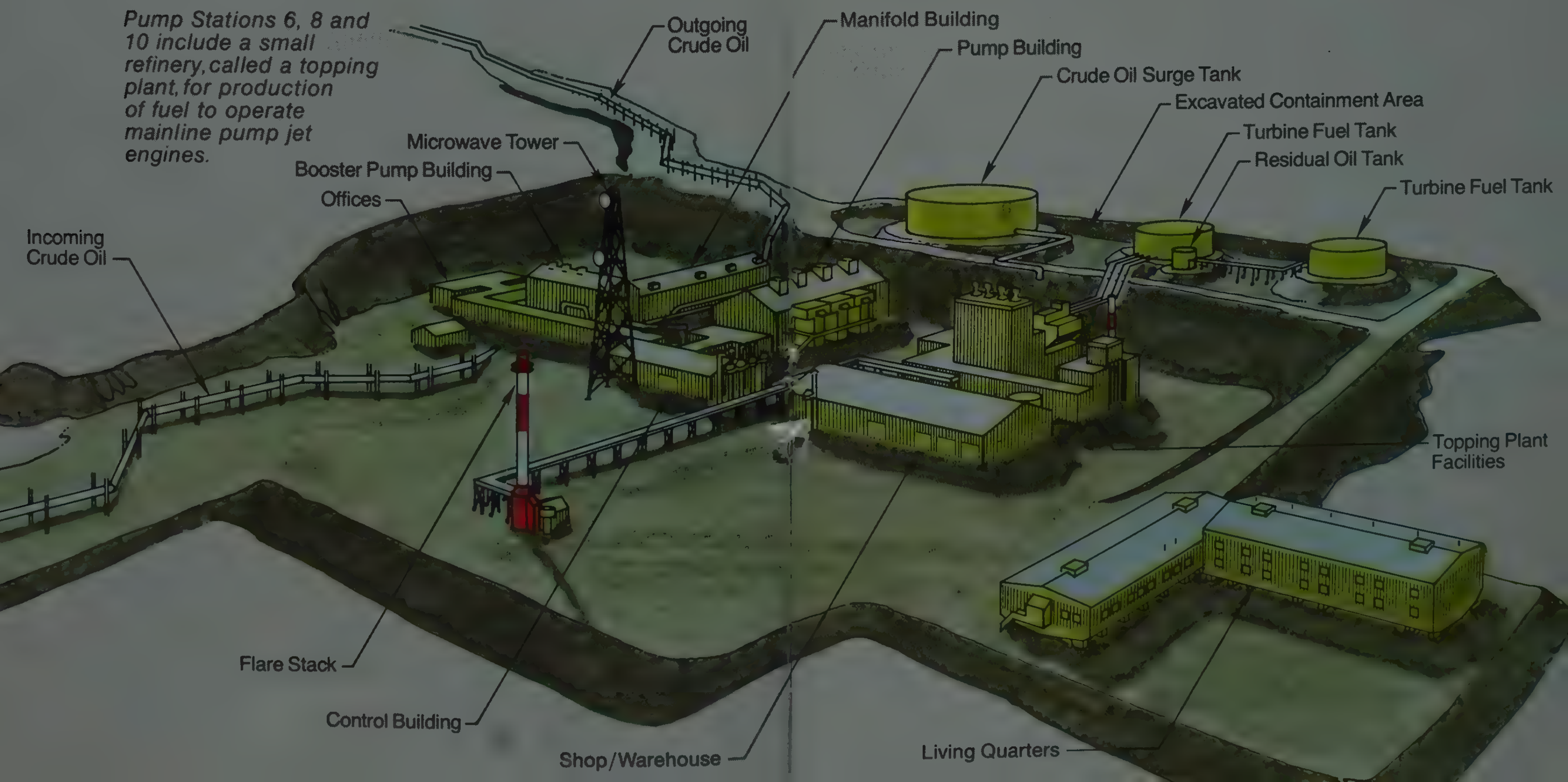
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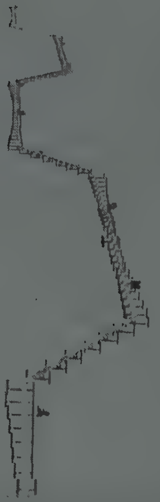
The 800 miles of pipe between Prudhoe Bay and Valdez are unique. Most pipelines are buried below ground. But, because of permafrost conditions across much of Alaska, more than half of the trans Alaska line is above ground.

The selection of which of the two primary modes to use depended primarily on soil conditions and the possible effects of pipeline heat on the soil. Normal burial, illustrated below, was used in stable soils and rock where thawing would not cause loss of soil support for the pipe. Also, special refrigerated burial was used in a few short sections for animal and highway crossings.



Zigzag design converts pipe thermal expansion, as well as movement from other forces, into a controlled sideways movement.

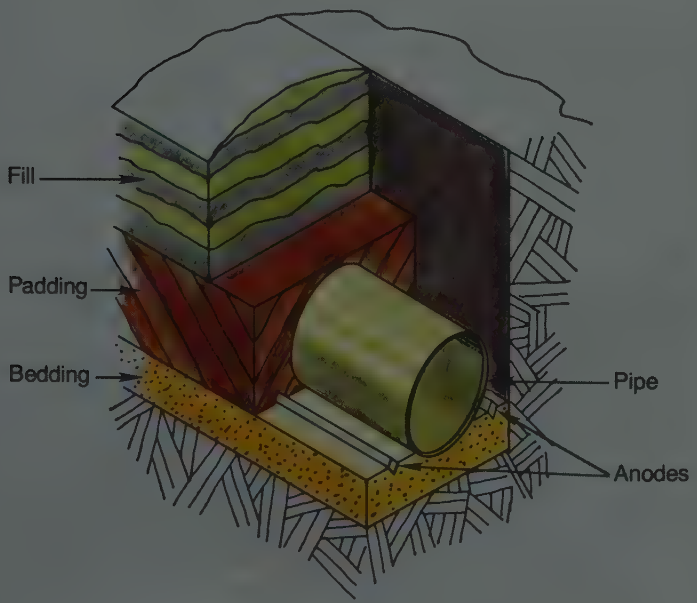
In places where melting permafrost might create difficult soil stability conditions, the pipeline was insulated, jacketed and installed above ground, as shown below. Thawing around the vertical supports in the most heat-sensitive areas is prevented by thermal devices, which carry heat up through pipes within the supports to fin-like radiators on top.

Above-ground sections were built in a flexible zigzag pattern, in which longitudinal expansion or contraction of the pipe from heat or cold is converted into sideways movement. This also would accommodate pipe motion induced by an earthquake.

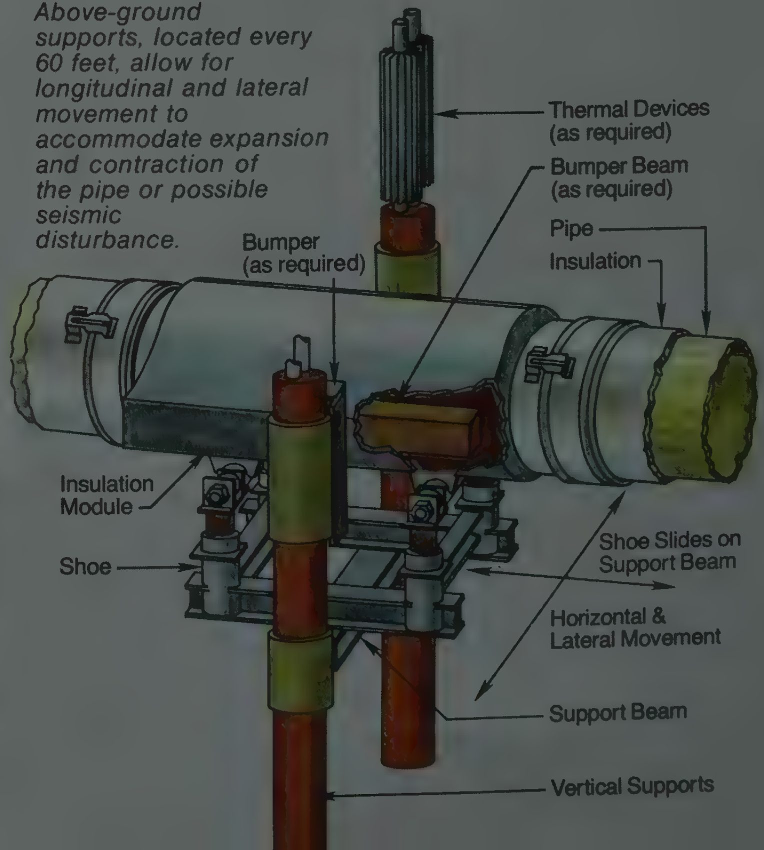
The pipe, specially manufactured for Alyeska, was coated and wrapped for protection from bacteriological, chemical and electrolytic corrosion. In addition, zinc anodes were installed with buried pipe for corrosion prevention.

At more than 800 river and stream crossings, the pipe bridges the waterway or is buried beneath it. And, at 151 points along the line, valves are installed to stop oil flow, if necessary. In particular, valves are located near key stream crossings, population areas and major uphill sections of the pipeline.

Burial, a normal pipelaying technique, is used where soil and permafrost conditions permit.



Above-ground supports, located every 60 feet, allow for longitudinal and lateral movement to accommodate expansion and contraction of the pipe or possible seismic disturbance.


Thermal Devices (as required)
Bumper Beam (as required)
Pipe
Insulation
Bumper (as required)
Insulation Module
Shoe
Shoe Slides on Support Beam
Horizontal & Lateral Movement
Support Beam
Vertical Supports

The Pipeline

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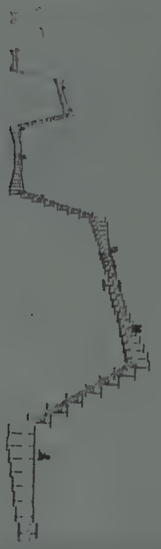

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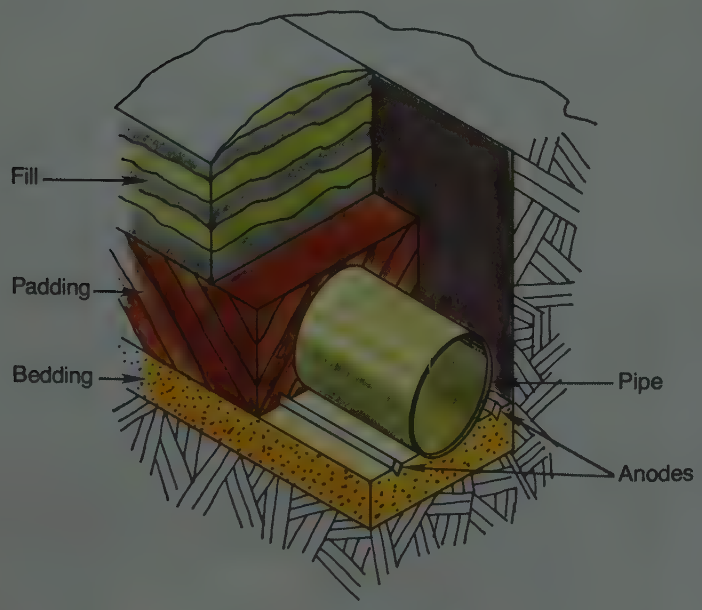

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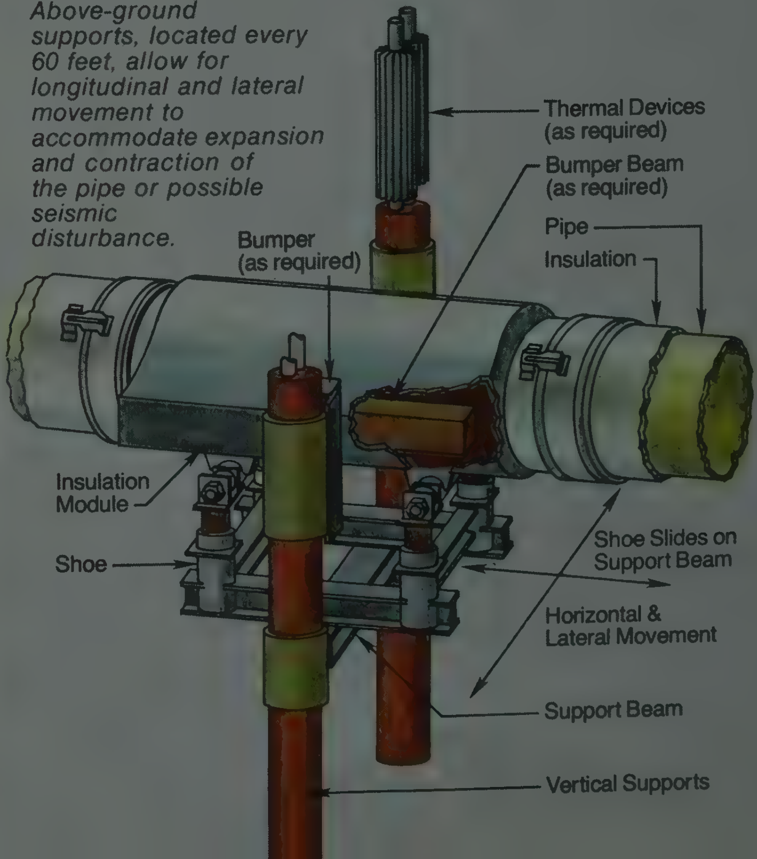

Above-ground supports, located every 60 feet, allow for longitudinal and lateral movement to accommodate expansion and contraction of the pipe or possible seismic disturbance.

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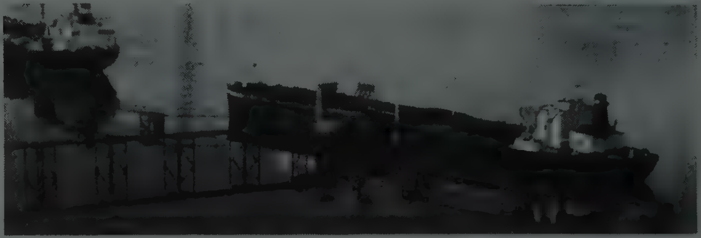
Oil, after being moved through the pump stations and pipeline from Prudhoe Bay, is loaded aboard tankers at the Terminal on the south shore of Port Valdez.

The 1,000-acre site, across the bay from the city of Valdez, is on an 11-mile-long fiord in the northeast corner of Prince William Sound. It is the northernmost ice-free harbor in the United States, and offers a deep-water entrance channel with a minimum width of approximately 800 yards.

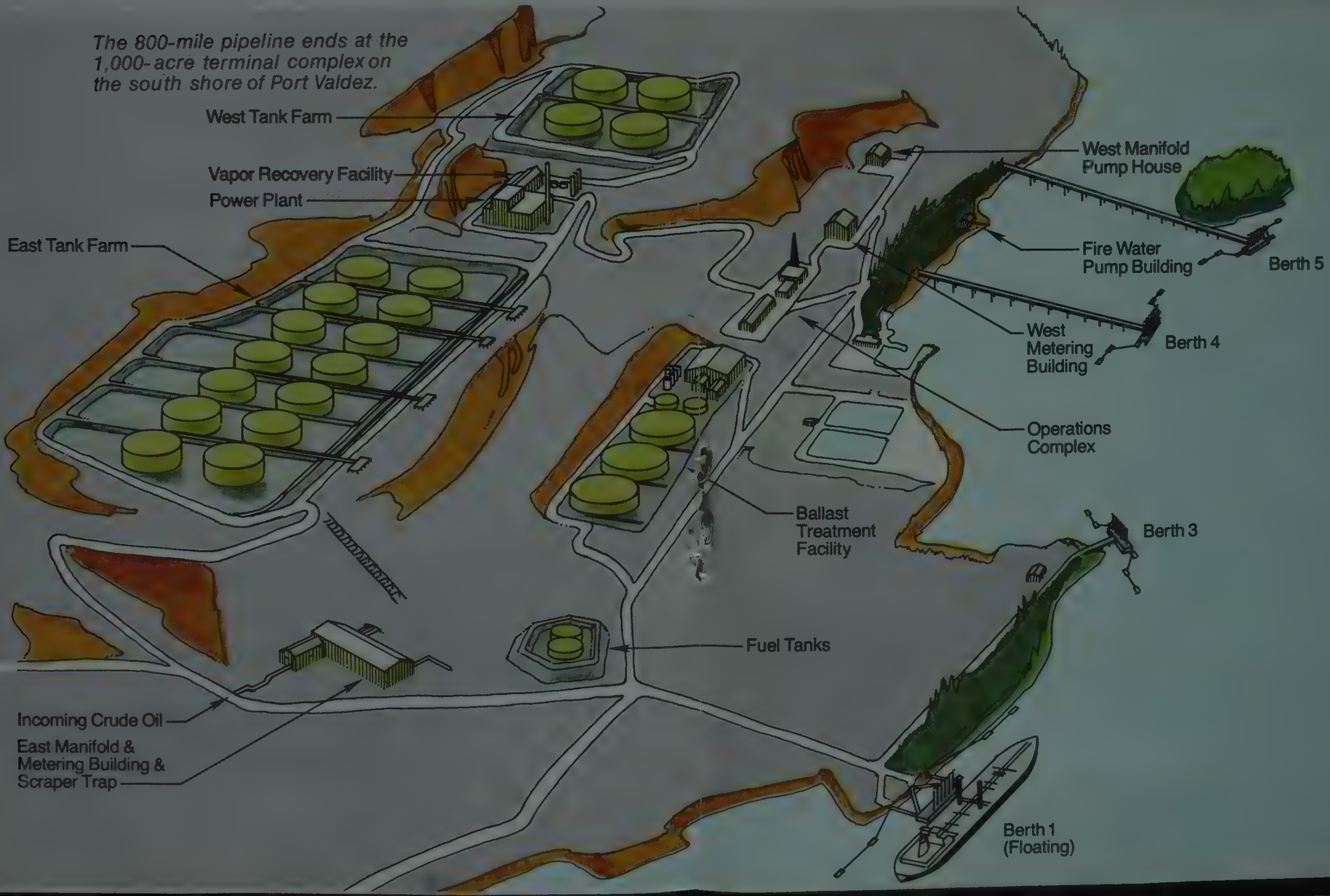
Facilities at the Terminal include everything necessary for temporarily holding the oil, and then loading it in tankers. Holding facilities include 18 cone-roof tanks with a total capacity of 9,180,000 barrels of oil.

Oil is gravity-fed to tanker loading facilities, which include one floating, and three fixed berths. The berths handle tankers of 50,000 to 265,000 deadweight tons, at loading rates up to 110,000 barrels an hour.

Other principal shore facilities, as shown below, include systems for vapor recovery, treatment of ballast water from tankers, power generation, water and sewage treatment, oil spill cleanups, firefighting, metering incoming oil, and operational control of the entire pipeline.



Four berths are provided for loading tankers.



The 800-mile pipeline ends at the 1,000-acre terminal complex on the south shore of Port Valdez.

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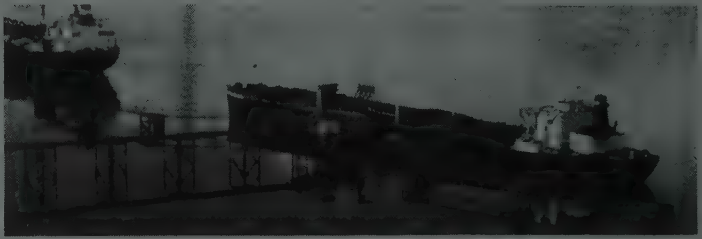

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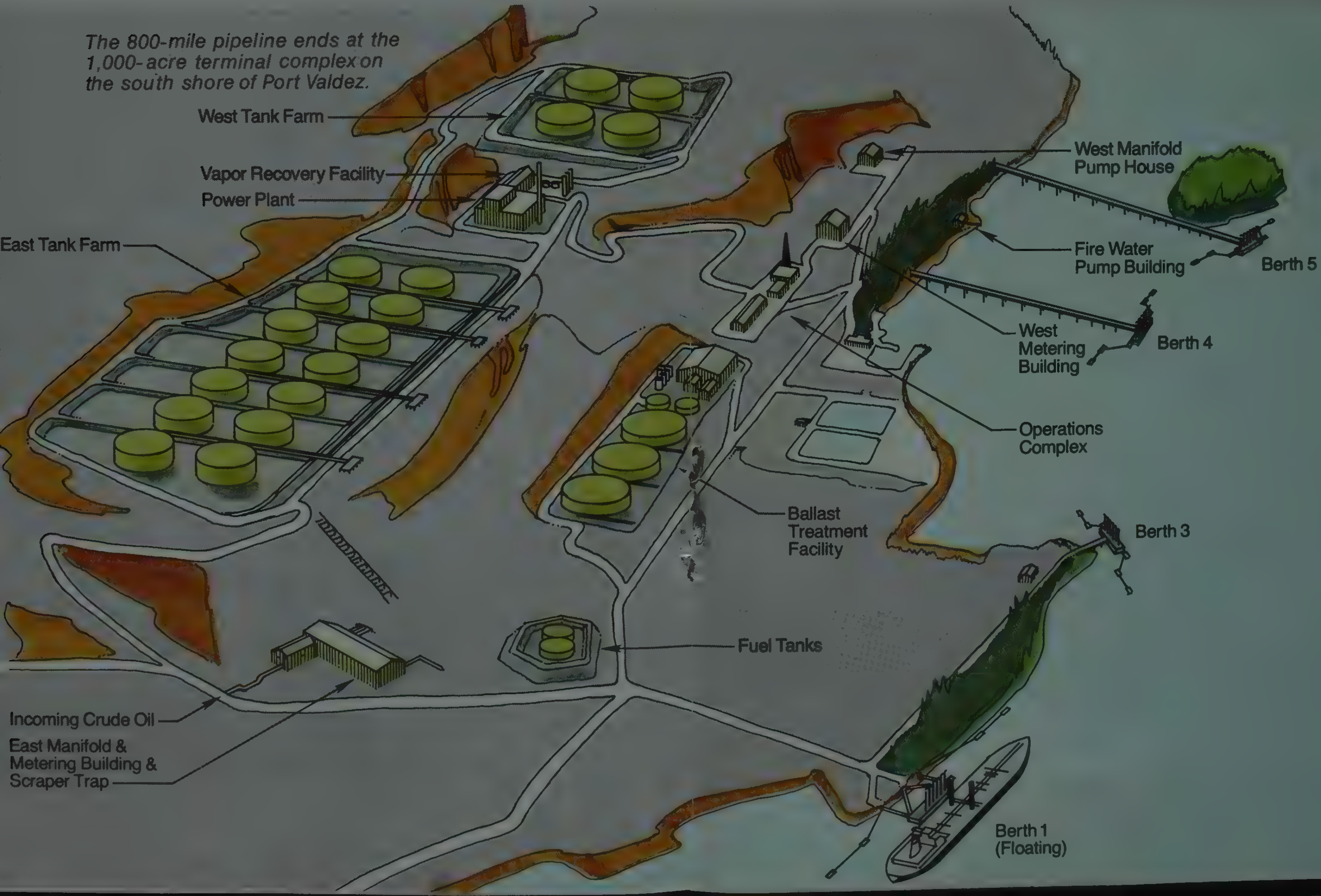
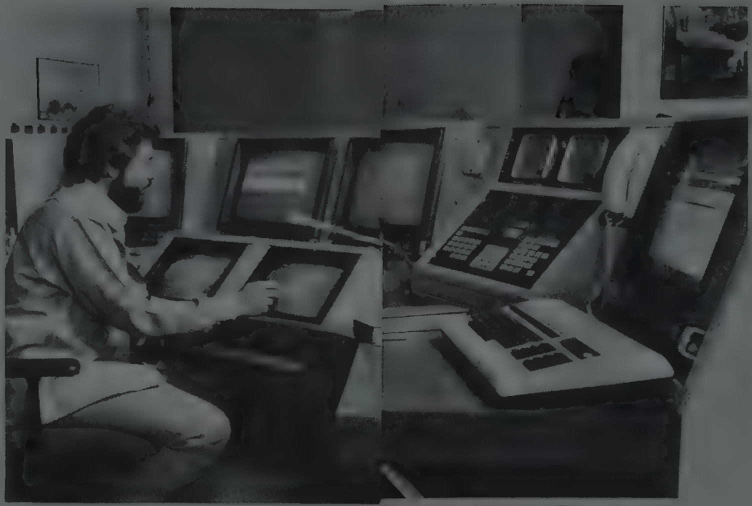


Operations

All elements of the trans Alaska pipeline should be viewed as one system. The pump stations, pipeline, and Terminal operate together to move crude oil in an orderly, controlled manner to tankers at Valdez.

Control Center — The 800-mile system is directed from the Operations Control Center at Valdez, where Pipeline and Terminal Controllers monitor and control almost every element of the line. Aided by computers, and working at consoles with data displays and push-button controls, the Controllers monitor and initiate actions at every working level, actions including a wide range of emergency procedures.

In addition, many operations in the system can be controlled locally, with Controller permission.

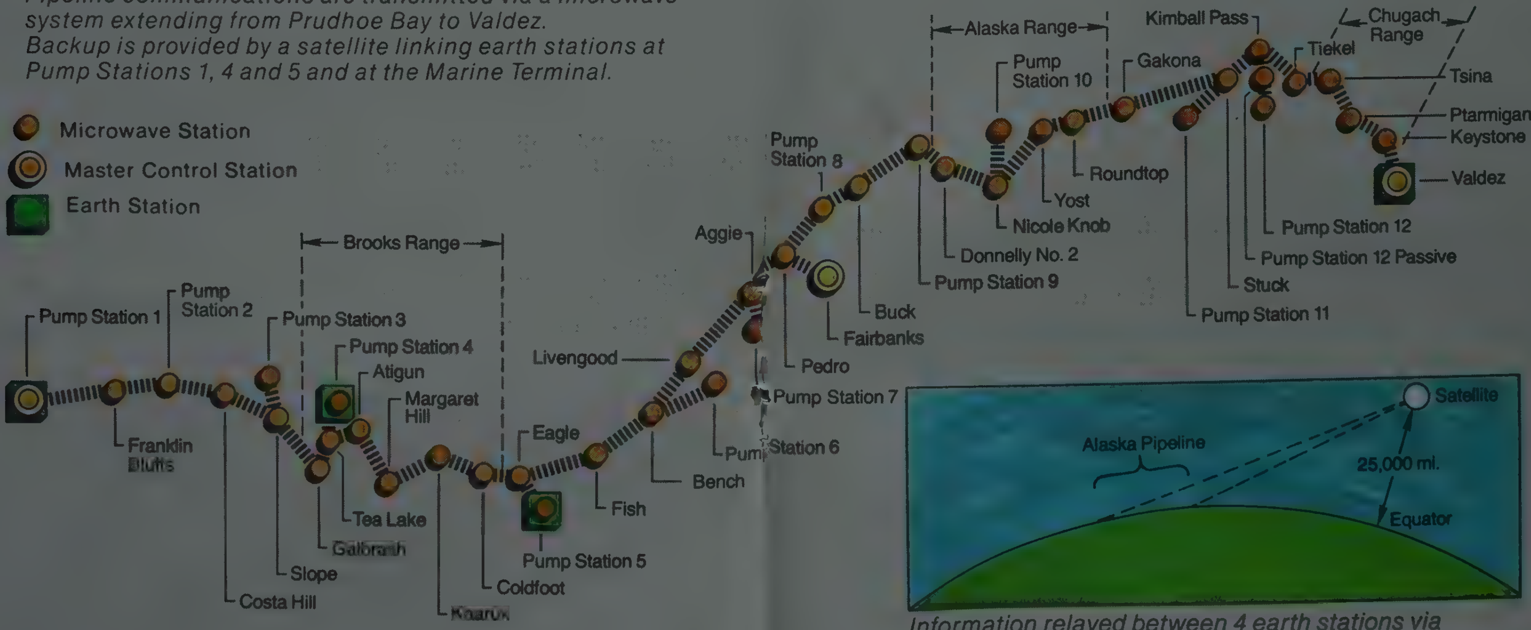

Monitoring and control of the pipeline and Terminal are directed from the Operations Control Center at Valdez.

Monitoring the pipeline — The Pipeline Controller receives a constant flow of information about conditions along the line. The data, analyzed and stored by computers, is displayed for quick review in summary formats on television-like screens.

All of the information is transmitted over the pipeline's backbone communications system of microwave stations, which generally parallel the pipeline route, as shown below. The microwave network is backed up by a satellite communications system.

Pipeline response systems — Information transmitted by the systems can trigger a variety of responses. In a few instances, signals to the Operations Center can start automatic responses. In most cases, however, the Pipeline Controller initiates the responses.

Pipeline communications are transmitted via a microwave system extending from Prudhoe Bay to Valdez. Backup is provided by a satellite linking earth stations at Pump Stations 1, 4 and 5 and at the Marine Terminal.



Information relayed between 4 earth stations via Satcom II.

Frequent air surveillance of the pipeline is carried out.

Preprogrammed, automatic responses may be triggered by such things as pressure changes, communications failures, valve closures, seismic alarms, and signals indicating the levels in pressure-relief and surge tanks.

The control system also is set up to handle a large number of situations on a sequential basis, with the initial command given by the Pipeline Controller.

Contollers also can issue specific commands to some equipment. For complex situations, they have detailed procedures to follow.

Leak alert and response—Four automatic leak alert and alarm systems are processed by the computer and provided to the Controllers. In addition, the systems are supported by frequent visual air and ground surveillance.

If a leak is detected, the Pipeline Controller will immediately alert Alyeska teams responsible for controlling and cleaning up any spills. Government agencies will be notified, too.

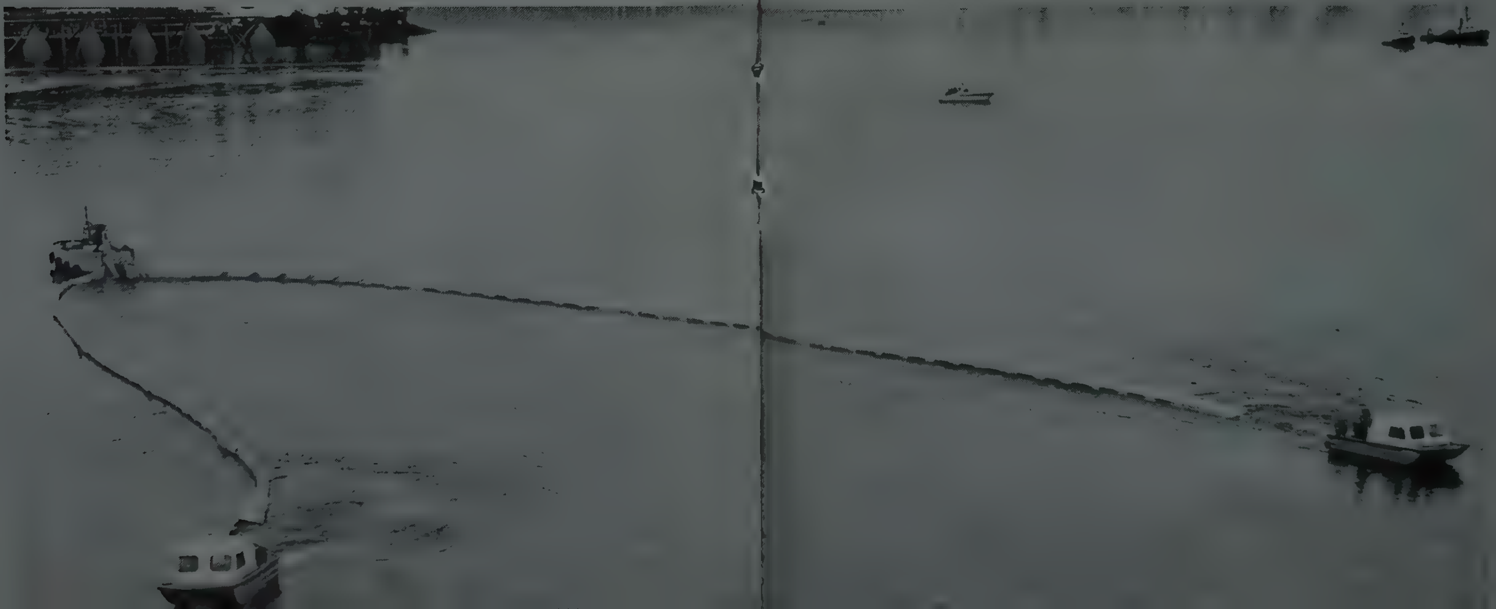
Detailed information is provided to oil spill crews for any potential spill site. Every mile of the line has been analyzed with a possible spill in mind so crews can identify sensitive wildlife and fish habitats and can know precisely where to erect any needed containment structures.

Terminal Controller—The same high level of control is maintained over Terminal operations. The Terminal computer presents the Terminal Controller with constantly updated information on all phases of Terminal operation. Included are such data as holding tank levels, valve status, incoming oil flow and berthing information.

Data received by the Terminal Controller can trigger a variety of automatic or Controller-directed responses.

Localized controls — Some parts of the system can be controlled locally, generally only when permission has been given by the Controllers. Pump station operators may be given such permissive control. The same is true for the Terminal official in charge of tanker-loading operations. In the latter case, local controls at the berths extend from preparation for arrival of a tanker, to the vessel's departure.

Tow boats extend containment booms out from a skimmer boat in an oil recovery training exercise at Valdez.



Frequent air surveillance of the pipeline is carried out.

Preprogrammed, automatic responses may be triggered by such things as pressure changes, communications failures, valve closures, seismic alarms, and signals indicating the levels in pressure-relief and surge tanks.

The control system also is set up to handle a large number of situations on a sequential basis, with the initial command given by the Pipeline Controller.

Contollers also can issue specific commands to some equipment. For complex situations, they have detailed procedures to follow.

Leak alert and response—Four automatic leak alert and alarm systems are processed by the computer and provided to the Controllers. In addition, the systems are supported by frequent visual air and ground surveillance.

If a leak is detected, the Pipeline Controller will immediately alert Alyeska teams responsible for controlling and cleaning up any spills. Government agencies will be notified, too.

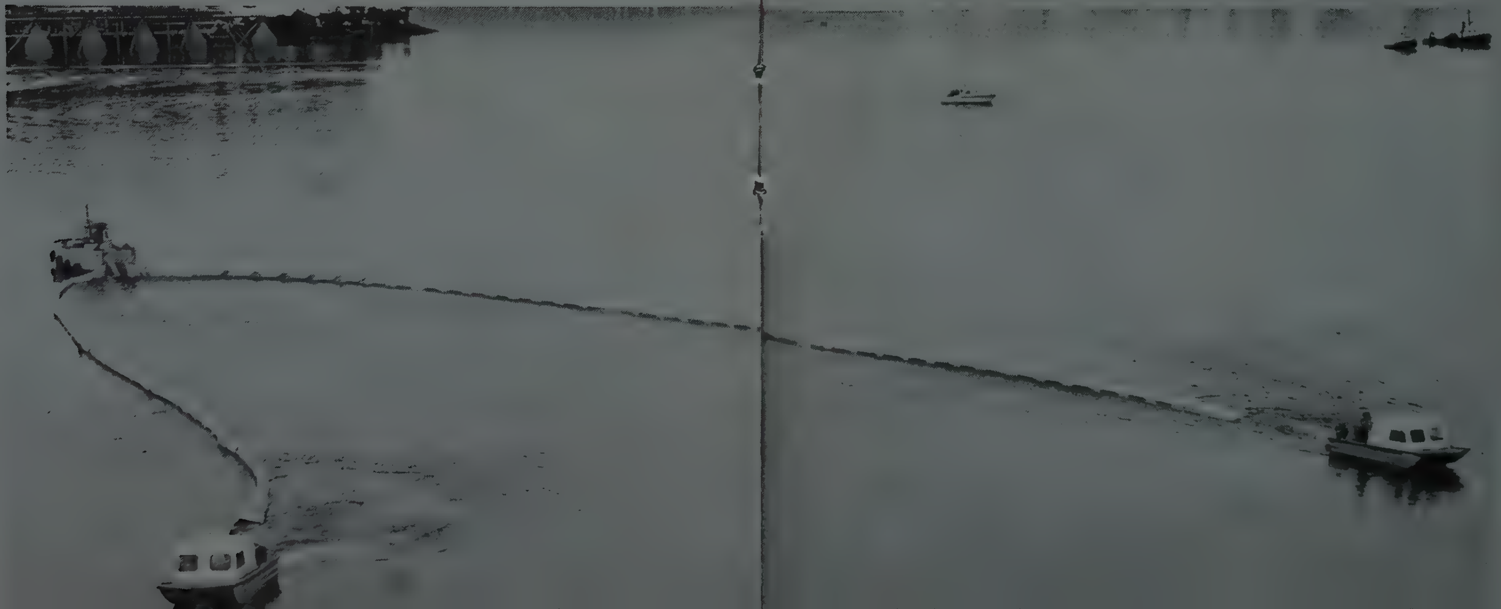
Detailed information is provided to oil spill crews for any potential spill site. Every mile of the line has been analyzed with a possible spill in mind so crews can identify sensitive wildlife and fish habitats and can know precisely where to erect any needed containment structures.

Terminal Controller—The same high level of control is maintained over Terminal operations. The Terminal computer presents the Terminal Controller with constantly updated information on all phases of Terminal operation. Included are such data as holding tank levels, valve status, incoming oil flow and berthing information.

Data received by the Terminal Controller can trigger a variety of automatic or Controller-directed responses.

Localized controls — Some parts of the system can be controlled locally, generally only when permission has been given by the Controllers. Pump station operators may be given such permissive control. The same is true for the Terminal official in charge of tanker-loading operations. In the latter case, local controls at the berths extend from preparation for arrival of a tanker, to the vessel's departure.

Tow boats extend containment booms out from a skimmer boat in an oil recovery training exercise at Valdez.



Nearly a century ago, ground seepages gave evidence of oil on Alaska's North Slope. However, it wasn't until July of 1968 that a confirmation of the Prudhoe Bay oil field was made. Within a year, plans for a pipeline were announced, and five years of study and testing began.

Early in 1970, several suits to halt pipeline construction were filed in courts by environmental groups and others. A 3½-year-long series of legal and legislative proceedings followed, during which construction was not allowed.

Air-transported engineers conducted preconstruction soil tests in the Brooks Range of northern Alaska.

Cargo aircraft played an important role in the buildup of equipment and supplies during winter, 1973-74.

Also in 1970, all responsibilities for design, construction, operation, and maintenance of the pipeline were assumed by the newly formed Alyeska Pipeline Service Company. Alyeska is owned by eight major pipeline companies.

Presidential approval of pipeline legislation on November 16, 1973, led to an immediate and massive logistical support program. During the winter of 1973-74, equipment, supplies, and construction camps were put in place north of the Yukon River.

Construction of the gigantic system was compressed into the period from 1974 to 1977. All essential elements of the pipeline and its workpad, pump stations, and Terminal were completed and tested; a 360-mile construction road, and a State of Alaska bridge across the Yukon were built; and operations planning and training were carried out. At the peak of construction, in August 1975, 21,600 workers were operating out of 31 construction camps along the 800-mile route.

Welders begin their first "passes" to join sections of pipe. Later, this pipe was buried, as was nearly half the pipeline.

The start-up process began June 20, 1977, when oil entered the line at Pump Station 1. The first oil reached the Marine Terminal July 28, and headed for market by tanker August 1.

Start-up was marred by a tragic explosion at Pump Station 8. One technician was killed, and the main pump building was destroyed. The line operated at less than its initial planned capacity of 1.16 million barrels daily until early 1978, when repairs were completed. Work carried out during 1978 and 1979 helped increase the pipeline's daily throughput to about 1.5 million barrels.

In late 1981, throughput was increased to about 1.6 million barrels a day. Current throughput is about 1.8 million barrels a day.

On March 11, 1985, the 4 billionth barrel of oil passed through the pipeline, and on March 5, 1986, the 6,000th tanker was loaded at the Marine Terminal.

The first tanker-load of oil headed for a refinery in the Lower 48 states August 1, 1977.

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